United States Department of the Interior

BUREAU OF LAND MANAGEMENT
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Integrated Weed Management for Cronan Ranch, Greenwood Creek, Dave Moore Nature Area and Norton Ravine (CA-180-12-13) Finding of No Significant Impact April 2012

It is my determination that this decision will not result in significant impacts to the quality of the human environment. Anticipated impacts are within the range of impacts addressed by the Sierra Resource Management Plan (RMP). Thus, the proposed action does not constitute a major federal action having a significant effect on the human environment; therefore, an environmental impact statement (EIS) is not necessary and will not be prepared. This conclusion is based on my consideration of CEQ's following criteria for significance (40 CFR §1508.27), regarding the context and intensity of the impacts described in the EA and based on my understanding of the project:

1) Impacts can be both beneficial and adverse and a significant effect may exist regardless of the perceived balance of effects. Potential impacts would include the mortality of targeted invasive plants and some mortality of non-target native vegetation, especially with prescribed fire. Recreationists would be impacted during temporary closures of areas for prescribed burning and herbicide application. Adjacent landowners could be impacted by smoke during prescribed burning. However, the end result of improved habitat and a better recreational experience should outweigh the negative short term impacts.

2) The degree of the impact on public health or safety. No aspects of the proposed action have been identified as having the potential to significantly and adversely impact public health or safety; however, some risks could occur from use of herbicides and prescribed fire. Herbicide use poses the risk of public exposure to chemicals. Prescribed fire could include the following risks: a) Sensitive members of the public and workers could experience discomfort from smoke which could include eye, nose, and lung irritation. B) Workers could also suffer burns from fires. The public could be exposed to similar risks if the fire escaped from the treatment area. To minimize risks to occupational and public receptors from exposure to herbicides and prescribed fire, implementation of the Proposed Action would follow the Project Design Features and SOPs and Mitigation Measures in Appendices A and B of the EA.

3) Unique characteristics of the geographic area. The project is located within the South Fork American River Special Recreation Management Area (SRMA) which is an area where recreation is the management focus. The South Fork American River SRMA receives a high amount of recreation due to the presence of the South Fork American River and a large trail network which encourage numerous recreational opportunities such as horseback riding, mountain biking, hiking, camping, fishing, kayaking, rafting, and gold panning. The South Fork American River has become one of the most heavily used rivers in America for white water rafting and kayaking. The proposed action is consistent with the management of this area and will help preserve the unique characteristics including recreational use and restoration of native plant communities.

4) The degree to which the effects on the quality of the human environment are likely to be highly controversial effects. No anticipated effects have been identified that are scientifically controversial. As a factor for determining within the meaning of 40 C.F.R. § 1508.27(b)(4) whether or not to prepare a detailed environmental impact statement, "controversy" is not equated with "the existence of opposition to a use." *Northwest Environmental Defense Center v. Bonneville Power Administration*, 117 F.3d 1520, 1536 (9th Cir. 1997). "The term 'highly controversial' refers to instances in which 'a substantial dispute exists as to the size, nature, or effect of the major federal action rather than the mere existence of opposition to a use.'" *Hells Canyon Preservation Council v. Jacoby*, 9 F.Supp.2d 1216, 1242 (D. Or. 1998).

5) The degree to which the possible effects on the human environment are likely to be highly uncertain or involve unique or unknown risks. The analysis does not show that the proposed action would involve any unique or unknown risks.

6) The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration. The proposed action is not precedent setting.

7) Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. No significant site specific or cumulative impacts have been identified. The proposed action is consistent with the Sierra RMP.

8) The degree to which the action may adversely affect National Historic Register listed or eligible to be listed sites or may cause loss or destruction of significant scientific, cultural or historical resources. The proposed action would not adversely affect cultural properties listed on or eligible for the National Register of Historic Places.

9) The degree to which the action may adversely affect ESA listed species or critical habitat.

Valley elderberry longhorn beetle (VELB) *(Desmocerus californicus dimorphus)* is listed as threatened under the Federal Endangered Species Act. This species is an obligate specialist on blue elderberry (*Sambucus mexicana*) and it has only been found in association with its host plant. Therefore, a project design feature has been developed to prevent impacts to elderberry during weed treatment. A no-spray buffer of 100' during broadcast spraying and 50' during spot treatments will be observed around blue elderberry shrubs to avoid any impacts to the VELB. They will be avoided by a 100' buffer during prescribed fire. Applicators will be trained to recognize this species. The BLM has determined that the proposed action may affect, but is not likely to adversely affect the VELB. The BLM is in the process of informal consultation with the USFWS regarding the proposed action.

Layne's butterweed (*Packera layneae*), a Federally threatened plant species, occurs within the Norton Ravine unit of project area. A no-spray buffer for special status plants (50 feet minimum) has been incorporated as a Project Design Feature and will be followed to prevent adverse impacts. Two BLM sensitive plant species also occur in the Norton Ravine unit and will be protected by the spray buffer. No prescribed fire would occur in the Norton Ravine unit; therefore, prescribed fire impacts to special status plants would not occur.

There are no other ESA listed species or critical habitat within the project area; therefore, consultation with US Fish and Wildlife Service is not necessary. However, limestone salamander is known to occur in the vicinity. Areas where weed treatments would occur are not considered suitable habitat and will not impact this species.

10) Whether the action threatens a violation of environmental protection law or requirements. There is no indication that the proposed action will result in actions that will threaten such a violation.

_____ _____

William S. Haigh Date
Field Manager,
Mother Lode Field Office

United States Department of the Interior

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EA Number: CA-180-12-13

Proposed Action: Integrated weed management for the Cronan Ranch parcel, Greenwood Creek parcel, Dave Moore Nature Area, and the Norton Ravine parcel.

Location: BLM-administered land within portions of T 11 N, R 9 E, Sections 8-12, 16, 17, 20, 21, 28, 29, El Dorado County.

1.0 **Purpose and Need for the Action**

1.1 **Introduction**

This Environmental Assessment (EA) has been prepared to disclose and analyze the environmental impacts of invasive plant management as proposed by the Mother Lode Field Office (FO). The EA is a field office site-specific analysis of potential effects that could result with the implementation of the Proposed Action. The proposed Integrated Weed Management (IWM) strategy is needed to reduce the adverse impacts associated with an increase in noxious and invasive weeds in the project area. The IWM approach would be implemented in accordance with Federal and State laws, regulations, and policies, and the Sierra Resource Management Plan. This EA has been prepared to disclose and analyze the environmental impacts of invasive plant management as proposed by the Mother Lode Field Office. The EA assists the BLM in project planning and ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any "significant" impacts could result from the analyzed actions. "Significance" is defined by NEPA and is found in regulation 40 CFR 1508.27.

An EA provides evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a statement of "Finding of No Significant Impact" (FONSI). If the decision maker determines that this project has "significant" impacts following the analysis in the EA, then an EIS would be prepared for the project. If not, a Decision Record may be signed for the EA approving the selected alternative, whether the Proposed Action or another alternative. A Decision Record, including a FONSI statement, documents the reasons why implementation of the selected alternative would not result in "significant" environmental impacts (effects) beyond those already addressed in the Sierra Resource Management Plan (February 2008).

1.2 **Background**

Invasive plants are defined as "non-native plants whose introduction does or is likely to cause economic or environmental harm or harm to human health," based on the definition provided in

Executive Order 131121[1]. Invasive plants are compromising the ability to manage BLM lands for a healthy native ecosystem. Invasive plants can create a host of environmental and other effects, most of which are harmful to native ecosystem processes, including: displacement of native plants; reduction in functionality of habitat and forage for wildlife and livestock; increased potential for soil erosion and reduced water quality; alteration of physical and biological properties of soil; loss of long-term riparian area function; loss of habitat for culturally significant plants; high economic cost of controlling invasive plants; and increased cost of keeping systems and recreational sites free of invasive species.

Integrated pest management[2] methods for invasive species control that will be analyzed in this EA include the following:

Chemical - Herbicides are chemicals that kill or injure plants. Herbicides can be categorized as selective or non-selective. Selective herbicides kill only a specific type of plant, such as broad-leaved plants, while non-selective herbicides kill all types of plants.

Mowing – Road and trail edges in the Cronan Ranch and Greenwood Creek areas are typically mowed two to three times per year. Mowing may also be used off trail as a follow-up to prescribed fire or herbicide application.

Physical - Manual treatments involve the use of hand tools (e.g., weed wrenches, shovels) and hand-operated power tools (e.g., hand-held brush cutters, chainsaws) to cut, clear, or prune herbaceous and woody species. Treatments include cutting undesired plants above ground level; pulling, grubbing, or digging out root systems of undesired plants to prevent sprouting and re-growth; cutting at the ground level or removing competing plants around desired species; or placing mulch around desired vegetation to limit competitive growth.

Prescribed Fire – The intentional application of fire under specified conditions of fuels, weather, and other variables would be used to control large infestations of invasive plants, typically when seed heads begin to appear, as the plants begin to dry out, and prior to seed shatter (i.e., when seed heads break and fall to the ground). Pile burning may also occur – ladder fuels along fire lines and within burn units may be cut, piled and burned to reduce fuel loading prior to prescribed burning.

1.3 **Need for Action**

This EA has been prepared to analyze and disclose the environmental consequences of implementing an IWM strategy for BLM lands within the 1,452-acre Cronan Ranch parcel, the 732-acre Greenwood Creek parcel, the 126-acre Dave Moore Nature Area, and the 939-acre

[1] EXECUTIVE ORDER 1311 INVASIVE SPECIES (1999) - directs federal agencies to prevent the introduction of invasive species and provide for their control, and to minimize the economic, ecological, and human health impacts that invasive species cause.

[2] INTEGRATED PEST MANAGEMENT - a sustainable approach to managing pests by combining biological, cultural, physical, and chemical tools in a way that minimizes economic, health, and environmental risks (DOI Departmental Manual 517).

Norton Ravine parcel. The proposed IWM program is needed to reduce the adverse impacts associated with an increase in invasive plants in the project area – specifically, yellow starthistle (*Centaurea solstitialis*), medusahead (*Taeniatherum caput-medusae*), oblong spurge (*Euphorbia oblongata*), Italian thistle (*Carduus pycnocephalus*), bull thistle (*Cirsium vulgare*), milk thistle (*Silybum marianum*), Scotch and French broom (*Cytisus scoparius, Genista monspessulana*), barbed goatgrass (*Aegilops triuncialis*), Klamathweed (*Hypericum perforatum*), tocalote (*Centaurea melitensis*), tree-of-heaven (*Ailanthus altissima*), and rush skeletonweed (*Chondrilla juncea*). Historic and current land use practices have created extensive infestations of yellow starthistle (YST) and medusahead (MDH) throughout the Cronan Ranch and Greenwood Creek areas. The rest of the invasive plants are found more sporadically throughout the project area and occur in smaller population sizes.

The project area falls within the South Fork American River Special Recreation Management Area (SRMA). This SRMA receives a high amount of recreation due to the presence of the South Fork of the American River and a large trail network which encourage numerous recreational opportunities such as horseback riding, mountain biking, hiking, camping, fishing, kayaking and rafting. Historic grazing prior to BLM management as well as current vectors for weed spread such as vehicles, bicycles, horses, pets and recreationists have contributed to the spread of weeds throughout the project area.

Various forms of control for YST have been attempted in the past in the project area. Trails and parking lot perimeters are typically mowed or weed whacked three to four times a year in the Cronan Ranch and Greenwood Creek areas to prevent encroachment of YST and other invasive weeds; however, this approach is only a temporary solution since invasive species quickly regrow. Control of YST with goat grazing was attempted but this method was unsuccessful at significantly reducing weed densities. Smaller patches of various weed species, such as Scotch and French broom, have been hand-pulled or pulled using weed wrenches with the assistance of various volunteer groups. This method can be effective at a small scale but meanwhile, invasive species in the project area continue to increase due to the limited amount of weed control efforts occurring each year.

Weed infestations can alter the use of trails and other areas. Because of its spiny nature, YST deters the use of lands for recreation. Even if the trails are passable, travel through a corridor of YST or other invasive weeds can feel inhospitable and appear unattractive. Areas that are dominated by invasive species are usually less visually aesthetic and deemed to be impacted by humans and hence not “natural.” YST is also known to significantly alter water cycles and deplete soil moisture reserves in annual grasslands and foothill woodland ecosystems. Because these infestations use deep soil moisture reserves earlier than associated natives such as blue oak or purple needlegrass, native species can experience drought conditions even in years with normal rainfall (Benefield *et al*. 1998, Gerlach *et al*. 1998). The increasing expansion of invasive plants in the project area has led to a loss of habitat function and reduced the quality and quantity of forage for wildlife, impaired visual aesthetics, altered soil productivity, and increased the potential for soil erosion and adverse impacts on water quality. Invasive plants are likely to continue to invade surrounding native habitat affecting recreation, wildlife, and other resources if an effective weed management plan is not implemented.

1.4 **Public Participation, Scoping and Issues**

Internal scoping took place with Jerry Martinez (Fire Management Officer) and Brian Mulhollen (Fuels Management Specialist) to gain information on prescribed fire logistics and burn units. Bruce Delgado, Botanist for the Hollister BLM FO, was contacted regarding his work on YST using integrated weed control methods. Craig Thomsen at UC Davis was consulted about his work with YST and MDH using integrated weed management strategies.

This EA will be made available for public review on BLM's NEPA webpage. The review period is 15 days. Additionally, local Native American tribes will be contacted to determine whether they have an interest in the proposed action.

1.5 **Conformance with Applicable Land Use Plans**

The Proposed Action is consistent with the Sierra Resource Management Plan Record of Decision (ROD), approved in February 2008. In Section 2.4 of the ROD for Vegetative Communities, it lists the following objectives: manage vegetation (including invasive species removal) to improve habitat conditions for particular wildlife species; and control invasive species and increase native plant species using early detection, rapid response, and prevention measures. Section 2.4 also lists the following management actions:

> Prevent, eliminate, and/or control undesired non-native vegetation or other invasive species using an Integrated Pest Management approach that combines biological, cultural, physical, and chemical tools to minimize economic, health, and environmental risks.
>
> Use prescribed fire, mechanical mastication, herbicides, manual removal, seeding, propagation, and planting or combinations of these methods to promote healthy, diverse vegetation communities.
>
> Implement and meet national BLM policies consistent with the Partners Against Weeds Initiative (DOI 1998) and Executive Order 13112.

The Proposed Action is also consistent with The South Fork American River Draft Management Plan (March 2003) which contains the following management guideline for noxious weed control:

> Each parcel along the South Fork American River shall have a Noxious Weed Control plan to expedite the BLM policy to eradicate populations of noxious weeds.

The Proposed Action is in conformance with The Cronan Ranch Management Plan (February 2007) which lists specific management actions for noxious weeds:

> All known populations of noxious weeds will be treated for eradication or reduced rates of spread. All methods of weed treatment may be considered including manual, mechanical, biological, and chemical methods.

The Cronan Ranch Management Plan also contains management actions for biodiversity and oak woodlands:

> Develop vegetative management plan for open and wooded areas on the Cronan Ranch. Encourage shade areas with native trees, such as oaks, pines, and willows. It is the policy of the BLM to encourage, expand, and maintain oak woodlands.

1.6 **Tiering to the Bureau-wide Programmatic Vegetation EIS**

This EA tiers to the *Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States Programmatic Environmental Impact Statement* (PEIS) (BLM 2007a), which analyzed the impacts of using herbicides (chemical control methods) to treat invasive plants on public lands. In addition, this EA incorporates by reference the *Vegetation Treatments on BLM Lands in 17 Western States Programmatic Environmental Report* (PER) (BLM 2007b), which evaluated the general effects of non-herbicide treatments (i.e., biological, physical, cultural, and prescribed fire) on public lands. The PEIS identifies impacts to the natural and human environment associated with herbicide use and appropriate best management practices (BMPs), standard operating procedures (SOPs), mitigation measures, and conservation measures for avoiding or minimizing adverse impacts. The PER describes the environmental impacts of using non-chemical vegetation treatments on public lands.

The PEIS identifies priorities including protecting intact systems; maintaining conditions that have led to healthy lands; and applying mitigation measures to minimize soil and vegetation disturbance and avoid introductions of invasive species. Vegetation treatment priorities identified in the PEIS (pg. 2-7) include:

- Use effective nonchemical methods of vegetation control where feasible.
- Use herbicides only after considering the effectiveness of all potential methods.

Several management objectives in the PEIS (pg. 2-7) are considered when determining appropriate treatment of an infestation:

- Containment to prevent weed spread from moving beyond the current infestation perimeter;
- Control to reduce the extent and density of a target weed;
- Eradication to completely eliminate the weed species including reproductive propagules (this is usually only possible with small infestations).

1.7 **Relationship to Statutes, Regulations, and Plans**

The Mother Lode Field Office has prepared this IWM strategy in compliance with Department of Interior (DOI) and BLM policy and manual direction, including **DOI Manual 517 (*Integrated Pest Management*)** and **BLM Manual Section 9015 (*Integrated Weed Management*)**.

Several Federal laws, regulations, and policies guide BLM management activities on public lands. The ***Federal Land Policy and Management Act of 1976*** **(FLPMA)** directs the BLM to manage public lands "in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resources, and archeological values." The

Carlson-Foley Act of 1968 and the ***Plant Protection Act of 2000*** authorize and direct the BLM to manage noxious weeds and to coordinate with other Federal and state agencies in activities to eradicate, suppress, control, prevent, or retard the spread of any noxious weeds on Federal lands.

The ***Federal Noxious Weed Act of 1974*** established and funded an undesirable plant management program, implemented cooperative agreements with state agencies, and established integrated management systems to control undesirable plant species. The ***Noxious Weed Control Act of 2004*** established a program to provide assistance through states to eligible weed management entities to control or eradicate harmful and non-native weeds on public and private lands. **Executive Order 13112*, Invasive Species***, directs Federal agencies to prevent the introduction of invasive species and provide for their control, and to minimize the economic, ecological, and human health impacts that invasive species cause (BLM 2007a).

The BLM has also produced national-level strategies for invasive species prevention and management. These include ***Partners Against Weeds*** (BLM 1996), which outlines the actions BLM will take to develop and implement a comprehensive integrated weed management program; and ***Pulling Together: National Strategy for Invasive Plant Management*** (BLM 1998), which illustrates the goals and objectives of a National invasive plant management plan (prevention, control, and eradication). The Federal Interagency Committee for the Management of Noxious and Exotic Weeds is leading a national effort to develop and implement a ***National Early Detection and Rapid Response System for Invasive Plants in the United States*** (FICMNEW 2003). The primary long-term goals of the proposed system are to detect, report, and identify suspected new species of invasive plants in the United States.

The EPA regulates pesticides (including herbicides) under the ***Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) of 1972*** as amended in 1988. This Act establishes procedures for the registration, classification, and regulation of all pesticides. Before any herbicide may be sold legally, it must be registered by the EPA. The EPA may classify a pesticide for general use if it determines that it is not likely to cause unreasonable adverse effects to applicators or the environment. A pesticide that is classified for restricted use must be applied by a certified applicator and in accordance with other restrictions.

2.0 Proposed Action and Alternatives

This section describes and compares the three alternatives considered for management of invasive weeds in the project area: Alternative A (*Proposed Action* – Herbicide, Prescribed Fire, Mowing and Physical Control), Alternative B (*No Action/no new action/continue current management strategies* – Mowing and Physical Control only*)*, and Alternative C (Herbicide, Mowing, Physical Control, but no Prescribed Fire).

2.1 Alternative A - Proposed Action

The Proposed Action is to implement an IWM program for the 3,249-acre project area containing Cronan Ranch, Greenwood Creek, Norton Ravine and the Dave Moore Nature Area (see attached map). BLM proposes to utilize a variety of methods and treatments including prescribed burning, herbicide applications, mowing, and physical control methods (e.g., hand-pulling and use of hand-held brush cutters) on invasive plant populations in the project area.

Management objectives for noxious weed infestations under the Proposed Action would be established and treatment priorities assigned based on the weed species and the size, density, and location of the infestation. Management objectives would include:

- **Eradication:** Eliminate the weed species, including seeds and fruits.
- **Containment:** Prevent the weed species from spreading beyond the current infestation perimeter.
- **Control or Suppression:** Reduce the extent and density of the weed species.

Invasive weeds known to occur in the project area are noted in Table 1, along with their corresponding areas of occurrence, proposed treatment methods, and management objectives. In general, physical treatment methods are preferred for individual or small isolated populations, while prescribed burning, mowing, and herbicide treatments are preferred for larger infestations—depending on the specific weed species and on the presence/absence of special status or other desirable plant species that could be adversely affected by herbicides.

Table 1. Weed Treatment Summary

Weed Species	Primary Occurrence	Method of Treatment	Management Objective
Barbed Goatgrass	Small infestations in Norton Ravine and Cronan Ranch parcels	Mowing, herbicide, prescribed fire	Control
Bull Thistle	Small infestations throughout the project area	Manual treatment, spot application of herbicide	Control
Klamathweed	Small infestations throughout the project area	Spot application of herbicide	Control
Italian Thistle	Small infestations throughout the project area	Manual treatment, spot application of herbicide	Control
Medusahead	Extensive infestations in Cronan Ranch and Greenwood Creek parcels	Prescribed fire, herbicide, mowing	Control
Milk Thistle	Small infestations throughout the project area	Manual treatment, spot application of herbicide	Control
Oblong Spurge	Small population in the Greenwood Creek parcel	Herbicide	Eradication
Rush Skeletonweed	Moderate populations in the Greenwood Creek parcel	Herbicide, manual treatment of small occurrences	Containment
Scotch and French Broom	Continuous occurrences along the South Fork American River; more sporadic occurrences along roads and trails in forested areas.	Physical control with weed wrenches or hand-pulling	Control
Tocalote	Small infestations throughout the project area	Manual treatment, spot application of herbicide	Control
Tree-of-heaven	Small patch near Norton Ravine parcel	Physical control – cutting or pulling, spot application of herbicide	Control
Yellow Starthistle	Extensive infestations in Cronan Ranch and Greenwood Creek parcels; smaller infestations in Dave Moore and Norton Ravine parcels	Prescribed fire, herbicide, mowing, brush cutting, and manual treatment of small occurrences	Control

Because management of invasive weeds is not a one-time thing, follow-up treatments in successive years are also covered by this EA. Three or more years of intensive management may be necessary to significantly reduce a population of YST (DiTomaso 2006). Under the Proposed Action, the following treatments would be implemented to control the spread of invasive weeds:

2.1.1 Prescribed Fire

Prescribed burning could occur on up to 600 acres annually from late spring to fall, but ideally in early summer in areas of dense YST and/or MDH. Desired burn conditions would support a moderate to high intensity burn that produces enough heat to kill maturing weeds prior to seed set and increases light penetration to the ground to germinate the stored weed seed bank the year following fire. Once the seed bank is germinated it too can be killed (either by reburning if fuels are adequate or with herbicides) resulting in a reduction of the seed bank over time. The most successful long-term, large-scale YST control treatment would be to follow a first year prescription burn with a broadcast herbicide application treatment the next year. An additional benefit of incorporating a prescribed burn into a YST management program is the control of noxious annual grasses such as MDH (DiTomaso 2006).

To the extent possible, existing trails and roads as well as streams (including the South Fork American River and tributaries) would be used as fire-control lines. In situations where new fire-control lines are needed, they would be constructed by either hand crew or a Sweco (small trail-building dozer with a 5 foot wide blade) and cleared to mineral soil prior to ignition. Maps showing the proposed burn units and associated fire-control lines can be found in the Burn Plan developed for this project. Foam may be used to establish fire lines in areas where ground disturbance is inappropriate due to resource concerns. Every effort will be taken to protect oak and conifer trees with fire lines and by limbing fuel ladders prior to the burn.

Blue elderberry shrubs (*Sambucus nigra* ssp. c*erulea*), which provide habitat for the Federally threatened valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), would be protected from prescribed fire by building a fire-control line around each elderberry shrub, or group of shrubs, with stems measuring 1-inch or greater in diameter at ground-level. Pre-treatment surveys will be conducted within each burn unit, and each blue elderberry shrub, or group of shrubs, meeting the above criteria within the treatment area will be flagged prior to implementation of the proposed action. A 100-foot buffer will also be flagged around each blue elderberry shrub, or group of shrubs, that meet the above criteria. Within this buffer the following activities will not occur: protective fire-control line described above; other fire-control lines; and pile burning. The pre-treatment survey will involve a careful count of all stems greater than one inch in diameter at ground level. The stem count will follow the guidelines in Table 1, Page 12 of U.S. Fish and Wildlife Service 1999 Conservation Guidelines for the Valley Elderberry Longhorn Beetle (USFWS 1999). Specifically, stems will be categorized as 1-3 inches, 3-5 inches and greater than 5 inches, in riparian or non-riparian habitat, and whether they have beetle exit holes or not. Post-treatment monitoring will be conducted to determine if any blue elderberry shrubs, or stems measuring one inch in diameter or greater at ground level, are damaged or killed by the prescribed burning. In the unlikely scenario that elderberry shrubs or stems are impacted by the proposed action, each elderberry stem measuring 1.0 inches or greater in diameter that is adversely affected as a result of the proposed project would be replaced according to the guidelines developed by USFWS (1999).

Special status plant species would be protected from prescribed fire with a 100-foot buffer as per the Project Design Features listed below. Control lines will be routed to avoid sensitive cultural

resources identified by the BLM archaeologist and sensitive cultural resources within burn units will be avoided with a 50-foot buffer. Fire-control lines will be constructed around utility poles and wooden fence posts within the burn area. Ignition operations would apply fire so that it spreads out from residual trees and utility poles to the extent possible. Fire lines would be routed to avoid sensitive resources (e.g., cultural and botanical). Instead, hose-lays and wet lines would be used in these cases. Pile burning may also occur. Ladder fuels along fire lines may be cut, piled and burned to reduce fuel loading prior to prescribed burning. Public notices would be posted at the entrance to the project area prior to ignition to alert visitors of project dates and temporarily closed areas and to alert smoke sensitive individuals so they can take proper precautions to limit their exposure to the smoke.

2.1.2 Herbicide Application

Foliar applications of herbicides would be made on invasive weeds at various stages of growth by certified applicators using BLM-approved herbicides under a Pesticide Use Permit (PUP) that details specifics of the applications. The following herbicides are proposed for use in the project area:

- Clopyralid
- Dicamba
- Glyphosate
- Triclopyr
- Aminopyralid (pending BLM approval)[3]

In the project area, herbicide application could occur on up to 650 acres of invasive weeds annually. The 650 total treatment acres is the maximum amount of acres that would ever be treated in a given year, and this amount would likely be much less. The treatment acres are dependent upon how many acres of invasive plants in the project area are burned using prescribed fire. The year following prescribed fire, the stored weed seed bank of YST would likely germinate and require follow-up treatment with a second-year burn or broadcast herbicide treatments. In addition, approximately 14 miles of trail edges in the Cronan Ranch and Greenwood Creek areas may be treated with herbicides to reduce weeds and make trails more accessible for recreational use. Smaller areas of herbicide application would occur for various infestations of weeds like oblong spurge or rush skeletonweed.

Herbicides are generally considered the most economical and effective method of controlling YST (DiTomaso 2006). Herbicides would be applied at the manufacturer's suggested application rates using approved methods as specified on the product labels and summarized in the PUPs. The combined total of all treatments of any one product on a given site will not exceed the maximum use rate per year as recommended by the manufacturer label or BLM maximum rates if lower than the label. All standard and required safety measures will be implemented prior to, during, and after application of all herbicides.

[3] The impacts of this herbicide are being analyzed in this EA so that if and when it is approved for use by the BLM, the Mother Lode Field Office would be able to use it without further NEPA analysis.

Clopyralid is a selective herbicide that may be applied using hand held equipment or ground vehicle usually January through June. It will be primarily used to control YST and other thistle species. Dicamba is a selective pre and post-emergent systemic herbicide that would be applied by hand held equipment, ground vehicle, or as a cut stump treatment usually February through December primarily to control broadleaf species. Dicamba kills broadleaf weeds before and after they sprout. Because dicamba is highly mobile in soils, it will only be applied to upland areas to avoid risk of migration into aquatic systems.

Glyphosate is a non-selective, systemic herbicide that may be applied year round by hand held equipment or ground vehicle. It would usually be applied January through November as the primary chemical to control non-native grasses and broadleaf weeds such as oblong spurge. Only glyphosate products that are approved for use in aquatic environments would be used to control invasive species by open water. Triclopyr is a selective systemic herbicide that may be applied February through December undiluted as a cut stump, basal bark, or girdle treatment on invasive woody species. Triclopyr may be applied by handheld equipment or ground vehicle to control Scotch broom and other woody species.

Aminopyralid is a selective systemic broadleaf herbicide that would be applied (once it is approved for use on BLM lands) by handheld equipment or ground vehicle usually January through June primarily to control YST, thistle species, and other broadleaf invasive weeds.

Broadcast Herbicide Treatments

Broadcast applications of herbicide would be applied to control large infestations of invasive species like YST and MDH using an ATV-mounted boomless sprayer or truck-mounted boom or handheld sprayer. Herbicide application would ideally be used the year following prescribed fire as a follow-up treatment if additional prescribed burning could not occur due to lack of fuels or logistical issues. Burning of YST would increase light penetration to the ground that would germinate the stored seed bank the year following fire. The germinated seed bank could either be treated by reburning if fuels are adequate or with herbicides, resulting in a reduction of the seed bank over time. Wick applications may also be used to treat YST growing near rare plants or riparian areas.

Clopyralid, dicamba, or aminopyralid would be applied to YST during periods of active growth, typically between December and July. Either clopyralid or aminopyralid would be applied in early spring, and dicamba would be applied later in the season as a follow-up treatment if needed. Glyphosate may be broadcast to control MDH after other non-target vegetation has senesced; however, because glyphosate is non-selective and kills both broadleaf species and grasses, this would only occur where the site was predominantly occupied by non-native species. Glyphosate would also be used for eradication of oblong spurge.

Pre-treatment surveys and monitoring for blue elderberry will be conducted as described under prescribed fire treatments. A 100-foot no herbicide buffer will also be flagged around each blue elderberry shrub, or group of shrubs, that meet the above criteria. In the unlikely scenario that elderberry shrubs or stems are impacted by the proposed action, each elderberry stem measuring

1.0 inches or greater in diameter that is adversely affected as a result of the proposed project would be replaced according to the guidelines developed by USFWS (1999).

To protect water quality, broadcast applications will be prohibited with a 25-foot buffer from surface water. Applications will not be made if wind speeds are greater than 10 miles per hour. All broadcast applications will be restricted from a 100-foot buffer around rare plant locations and blue elderberry shrubs to avoid any impacts to the Federally threatened valley elderberry longhorn beetle. Public use restrictions and closures would be required following herbicide applications and times would vary depending on the chemical applied. Closure of areas following herbicide application would consist of the following: 4-hours (glyphosate), 12-hours (clopyralid), 24-hours (dicamba), 48-hours (triclopyr and aminopyralid). Applicators would have easy access to emergency decontamination and first aid kits whenever herbicides were applied.

Spot Treatments of Herbicide

To facilitate the strategy of "early detection – rapid response", spot treatments may be made anywhere in the project area on small occurrences of weeds. Spot treatments would be conducted on smaller infestations using a backpack sprayer or similar handheld device. Spot treatments would be restricted from a 50-foot buffer around rare plant sites. Pre-treatment surveys and monitoring for blue elderberry will be conducted as described under prescribed fire treatments with the exception that a 50-foot no herbicide buffer (rather than a 100-foot buffer) will be flagged around each blue elderberry shrub, or group of shrubs, that meet the aforementioned criteria. In the unlikely scenario that elderberry shrubs or stems are impacted by the proposed action, each elderberry stem measuring 1.0 inches or greater in diameter that is adversely affected as a result of the proposed project would be replaced according to the guidelines developed by USFWS (1999). Applications will not be made if wind speeds are greater than 10 miles per hour. No spot applications of herbicide will be applied within 10 feet of flowing/standing water (i.e., creek, river, etc.).

All herbicide treatments would comply with the U.S. Environmental Protection Agency label directions and follow BLM procedures outlined in BLM Handbook H-9011-1 (*Chemical Pest Control*) and BLM Manual Sections 1112 (*Safety*), 9011 (*Chemical Pest Control*), and 9015 (*Integrated Weed Management*) and meet or exceed State label standards. Herbicide applications would adhere to all State and Federal pesticide laws. All applicators that apply herbicides in the project area (i.e., certified applicators or those directly supervised by a certified applicator) would comply with the application rates, uses and handling instructions on the herbicide label, and where more restrictive, the rates, uses, and handling instructions developed by the BLM.

Implementation of the Proposed Action would follow the SOPs listed in Appendix A (Table 2-8 pg. 2-30-2-24 of the PEIS) and Mitigation Measures listed in Appendix B (Table 2-9 pg. 2-41-2-42 of the PEIS).

2.1.3 Mowing and Use of Hand-Held Brush Cutters

Mowing and brush cutting are currently used in the project area along trails, trailheads, and other high-use recreation facilities to manage invasive weeds. Approximately 50 acres of invasive weeds may be treated annually by mowing or with hand-held brush cutters. YST and other weeds

with spines can impede recreational use and require maintenance in high-use areas. These treatments may be necessary in the event that burning or herbicide applications are not effective (e.g., to control resprouting) or not carried out. Mowing would be conducted with a tractor-powered mower or hand-operated self-propelled mower. Weed eating would be conducted with hand-held, gas-powered brush cutters. Mowing and weed control with brush cutters would ideally occur during the spiny growth stage of YST when approximately 5% of the flowering heads have turned dark yellow and the bases of YST stems begin to turn brown, which usually occurs in early July. If the mowing is well-timed, the plants will have exhausted their carbohydrate reserves and will not regrow. Mowing and brush cutting to control MDH would occur in late spring to early summer, taking advantage of the fact that MDH matures after the surrounding vegetation, but prior to seed set. Oak and pine seedlings would be avoided.

2.1.4 Physical Control

Manual treatments would involve hand-pulling or the use of hand tools like weed wrenches, shovels, and short handled mattocks to cut and dig out root systems of biennial species like thistles, or annual species like YST. Up to ten acres a year could be treated with physical control methods. Hand-pulling would be conducted in areas of light infestation or sensitive resources. Scotch and French broom may be pulled with the use of weed wrenches. Physical control also includes use of hand-held brush cutters which is mentioned with mowing, above.

2.1.5 Revegetation

Areas disturbed by weeds may be reseeded or planted with desirable vegetation following treatment if the native plant community is considered unlikely to recover on its own. DOI policy states, "Natural recovery by native plant species is preferable to planting or seeding, either of natives or non-natives. However, planting or seeding should be used only if necessary to prevent erosion or resist competition from non-native invasive species" (BLM 2004). In order to increase plant competition with YST, MDH, and other large weed infestations, revegetation may be conducted using native species or desirable non-native species, especially deep-rooted perennials. Acorns from local live oak and blue oak trees may be collected and planted to supplement areas where oak seedlings were planted by seed in 2008 in an effort to establish more diverse age classes of oaks. Tree cover would help decrease YST which does not survive well in shaded areas and is less competitive in areas dominated by shrubs, trees, taller perennial forbs and grasses (DiTomaso 2006). Native plant seed from grasses or forbs may be collected from local populations approximately the same elevation as the project area. Test plots of some of these species could be seeded by hand and evaluated.

Seed may be installed by broadcast-seeding followed by raking or harrowing or by a tractor-powered rangeland drill, and any straw used would be certified as "weed-free." If the site needs to be cultivated (disced) prior to seeding, cultural and biological surveys would be conducted prior to ground disturbance and a site-specific NEPA document would be prepared.

2.1.6 Prevention

Prevention is generally recognized as the most effective and economic form of weed management (DiTomaso 2000). Surveys of the project area for the presence of new infestations

of invasive weeds would be conducted by all BLM staff working in the area and reported to the botany staff immediately to identify new or previously unknown infestations. The control strategies described above would be implemented to remove small infestations before they set seed and spread further. This tactic, known as "early detection – rapid response" is more cost effective than waiting until the problem worsens.

2.1.7 Monitoring

Monitoring is an essential component of an IWM program. Two types of monitoring would be conducted as part of the plan: implementation monitoring ("Did we do what we said we would do?") and effectiveness monitoring ("Were weed treatments effective?") (BLM 2007a). Evaluating the effectiveness of control techniques and ensuring that SOPs and mitigation measures are implemented appropriately and are effective are critical components of the Proposed Action. All weed treatments would be monitored. If all mature plants are eliminated, monitoring would continue in order to detect and eliminate new plants arising from seed, propagule, or root stock for the duration of the seed longevity for that species. The monitoring of infestations associated with the objectives of control or containment would continue at periodic intervals or for an indefinite period. Table 2 lists the methods used to evaluate treatment effectiveness which are tied to the management objective for a given infestation.

Table 2. Management Objectives, Monitoring Methods, and Measures of Effectiveness

Management Objective	Monitoring Method	Measure of Effectiveness
Eradication	Visually inspect infested area	Absence after a period of time (depends on seed longevity of the weed species)
Control or Suppression	Measure percent cover via quadrats or transects	Reduction in percent cover
Containment	Measure area of infestation by mapping perimeter via GPS or recording length and width of infestation	Reduction in area of infestation

As seen in Table 2, if the management objective for an infestation is eradication, the post-treatment monitoring would emphasize the collection of presence/absence data by visual inspection. In this case, the treatment would be considered successful when the target species is absent from its former location. Typically, this would be evaluated through the period over which the seed bank would remain viable. In comparison, monitoring associated with the objectives of control/suppression or containment would focus on quantitative methods—i.e., the reduction in percent cover or infestation size. Documentation would vary by weed species and may include qualitative observations and photos, mapping via GPS, and/or permanent quantitative plots depending on the weed species.

If monitoring demonstrates that a treatment has not been effective in achieving the management goal, corrective actions (e.g., retreatment with the same or different method or combination of methods) would be identified and implemented to enhance the level of success. Data on treatment effectiveness collected during monitoring would be entered into the National Invasive Species Information Management System (NISIMS).

2.1.8 Project Design Features

- Blue elderberry shrubs (*Sambucus nigra* ssp. *cerulea*), which provide habitat for the Federally threatened valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), would be protected from fire by building a fire-line around each blue elderberry shrub, or group of shrubs, with one or more stems measuring one inch in diameter or greater at ground level in the burn unit. Buffers will be established and clearly flagged around elderberry shrubs meeting the criteria described above as follows:

  100-foot buffer – The following activities will occur outside of the buffer:
  - Protective fire-line as described above
  - Other fire-control lines
  - Pile burning
  - Broadcast herbicide

  50-foot buffer – Spot herbicide treatments will occur outside of the buffer.

  5-foot buffer – Mowing and weed-eating will occur outside of the buffer.

- Pre-treatment surveys will be conducted within each treatment unit, and each blue elderberry shrub, or group of shrubs, with one or more stems measuring one inch in diameter or greater at ground level within the treatment area will be flagged prior to implementation of the proposed action. The pre-treatment survey will involve a careful count of all stems greater than one inch in diameter at ground level. The stem count will follow the guidelines in Table 1, Page 12 of U.S. Fish and Wildlife Service 1999 Conservation Guidelines for the Valley Elderberry Longhorn Beetle (USFWS 1999). Specifically, stems will be categorized as 1-3 inches, 3-5 inches and greater than 5 inches, in riparian or non-riparian habitat, and whether they have beetle exit holes or not.

- Post-treatment monitoring will be conducted to determine if any blue elderberry shrubs, or stems measuring one inch in diameter or greater at ground level, are damaged or killed by the proposed action.

- In the unlikely scenario that elderberry shrubs or stems are impacted by the proposed action, each elderberry stem measuring 1.0 inches or greater in diameter that is adversely affected as a result of the proposed project would be replaced according to USFWS (1999).

- Special status plant species will be protected by a 100-foot buffer during prescribed fire and broadcast herbicide applications. A 50-foot buffer will apply during spot herbicide application.

- Herbicide applicators, fire staff, and others carrying out the proposed action will be trained to recognize blue elderberry and rare plants in the project area.

- Oak and conifer trees will be protected to the extent possible within burn units and on fire lines by creating a buffer and by limbing fuel ladders prior to the burn.

- Fire-control lines will be constructed around utility poles and wooden fence posts within the burn units.

- Fire-control lines will be routed to avoid sensitive cultural resources identified by the BLM archaeologist. Sensitive cultural resources within burn units will be avoided by creating a 50 foot buffer.

- To avoid any exposure of the public to spray drift, the spray areas will be posted with "spraying, do not enter" signs on the day of spraying and restricted entry intervals specified by the herbicide label will be observed.

- To avoid drift of the spray mix reaching surface water, a 25' no-spray buffer will be observed around any open water for broadcast treatments. For spot applications a 10’ no-spray buffer will be observed. Hand pulling or other physical methods will be used for weed control in the buffer zone.

- To avoid drift, spraying will not occur if wind speeds exceed 10 mph.

- No spraying will occur if rain is predicted within 24 hours of the time of spraying.

- Mixing and loading operations will be conducted a minimum of 100' from any body of water, and there will be provisions for spill containment at the loading/mixing site.

- Protective equipment as directed by the herbicide label will be used.

- A copy of Material Safety Data Sheets (MSDS) will be kept at work sites.

- Herbicide labels will be followed for use and storage.

2.2 Alternative B – No Action (Continue Present Management)

Under the No Action Alternative, the BLM would continue its current approach to weed management in the project area. Weed treatments would be limited to mowing and use of hand-held brush cutters along trails and parking areas, and manual treatments for small weed infestations. Because of the person-power required for mowing and physical control methods, the total area treated annually for invasive weeds under this alternative would be economically limited and much fewer acres would be treated per year than under Alternative A. The maximum total treatment acres per year would be up to 50 acres of mowing and brush cutting and up to ten acres of physical control.

Mowing at the wrong time of year can result in rapid YST regrowth and increased seed set, and can also increase the amount of MDH. Mowing removes all vegetation to a certain height (approx. 4 inches) resulting in increased light penetration to the ground and increased YST

germination and thus is not appropriate as one of the only options in a control program. While mowing can be an effective tool during certain stages of YST and MDH and when combined with other treatment methods, it has not been demonstrated to give YST control greater than 90% even when successful, which would allow 10% of the plants to re-invade (Benefield *et al*. 1999).

2.3 Alternative C

This alternative would implement an IWM program that would contain the elements of the strategy described under the Proposed Action, with the exception that prescribed fire would not be used. The inability to use prescribed fire would preclude treatment of large infestations of YST and MDH because a combination of both prescribed fire and herbicide is needed to effectively treat these species. Thus, treatment acres would be much less than under the Proposed Action but slightly more than under the No Action Alternative because invasive plants could be treated with herbicides under this alternative. Up to 14 miles of trail edges may be treated with herbicides (or approximately 105 acres) under this alternative plus an additional 100 acres of herbicide treatment for weed infestations outside of the trail system. The maximum total treatment acres per year for mowing and brush cutting would be up to 50 acres and up to ten acres of physical control. The same Project Design Features as under the proposed action would apply, with the exception of those which apply to prescribed fire.

2.4 Alternatives Considered but Eliminated from Detailed Analysis

Biological control which involves the intentional use of domestic animals, insects, nematodes, mites, or pathogens (agents such as bacteria or fungus that can cause diseases in plants) to weaken or destroy vegetation was considered but eliminated from further analysis. Biological control is used to reduce the targeted weed population to an acceptable level by stressing target plants and reducing competition with the desired plant species. Biological control agents for YST, including bud weevil, hairy weevil, and gall fly, are currently widespread in the western U.S. but have failed to reduce YST populations. Goat grazing as a form of YST control was attempted for a one year trial period in the past by the BLM at Cronan Ranch but was not effective in reducing YST seed production. Other invasive species in the project area either do not have effective biological control agents or are so widespread that biological control would not be an effective option.

An alternative was considered but eliminated from further analysis which would contain the elements of the IWM approach described under the Proposed Action including prescribed fire, except that herbicides would not be used. However, the inability to use herbicides following prescribed fire would preclude the use of fire. As mentioned previously, prescribed fire increases light penetration to the ground to germinate the stored weed seed bank the year following fire. A combination of both prescribed fire and herbicide is needed to effectively treat large stands of YST and MDH.

3.0 Affected Environment

The following critical elements have been considered for this environmental assessment, and unless specifically mentioned later in this EA, have been determined to be unaffected by the

proposal: areas of critical environmental concern, prime/unique farmlands, floodplains, hazardous waste, wilderness, and environmental justice.

Air Quality

Although it has not been extensively studied, the air quality in the project area is generally considered good, but there are some fluctuations in quality during the summer months due to inversion layers. The air quality of the planning area is influenced by multiple factors including weather, geography, wood smoke from woodstoves, air pollution from nearby metropolitan areas, and vegetation control (i.e., burn piles).

Cultural Resources

Cultural resources are an important factor to consider in analyzing the potential impacts of the proposed action and other alternatives. A cultural resource study, completed in 2001 by BLM archaeologists, identified numerous historic and prehistoric cultural resources within the South Fork American Planning Area, including the Dave Moore, Greenwood Creek, and Norton Ravine parcels. As part of this study, the results of previous field inventories within the Planning Area were reviewed and additional reconnaissance level inventories were conducted by BLM archaeologists, focusing on the Greenwood Creek parcel (which at that time was a new acquisition). A reconnaissance level inventory was conducted for the Cronan Ranch parcel in 2004 by BLM archaeologists. This inventory was prompted because this parcel was a new acquisition. Prehistoric and historic-era cultural resources were identified. Since the early 2000s, other cultural resource studies have been conducted by BLM archaeologists within the Greenwood Creek, Cronan Ranch, and Norton Ravine parcels for various projects (related to recreation and ecological restoration). These studies have virtually all been to help BLM comply with Section 106 of the National Historic Preservation Act. They have involved field inventories and Native American consultations and have led to the identification of additional cultural resources. To date, no traditional cultural places have been identified. At this time, the project area has been extensively inventoried, though it has not been entirely inventoried at the intensive level and additional inventory may be productive. Cultural resources within the project area are typical for river corridors of the west-central Sierra Nevada; the resources relate to prehistoric occupation and food processing; Gold Rush-era mining and associated activities; and later nineteenth century and early twentieth century ranching, farming, and settlement. Some of the cultural resources within the project area may be eligible for inclusion on the National Register of Historic Places, though no formal National Register evaluations have been conducted. A BLM archaeologist is in the process of reviewing the proposed action to determine whether it would affect National Register-eligible cultural resources, pursuant to Section 106 of the National Historic Preservation Act. This review includes a background records search, field inventory, and Native American consultation.

Fire and Fuels

The project area contains terrain heavily laden with built-up fuels. In response to long-standing public concern, wildfires have been vigorously suppressed for decades for public safety, protection of property, and to reduce catastrophic fire effects on the environment. Exclusion of

fire over the years has resulted in increased fuel loading to levels that could potentially enable a wildfire to burn with such intensity that large areas could be severely impacted, and make fire control extremely difficult. Several BLM-managed parcels in the Sierra Nevada foothills are stereotypic examples of wildland urban interface (WUI), with homes and businesses built up against public land boundaries and some private inholdings within BLM wildlands. These "rural sprawl" areas are a possible ignition source of fires burning onto the planning area.

Human Health and Safety

Physical Control & Mowing – Treating weeds by pulling and digging would not affect human health or safety. Mowing and the use of weed eaters to remove weeds at ground level prior to seed development could pose a threat to the safety of the user if appropriate precautions were not taken. The public could be at risk from flying debris if they were near an area where manual or mechanical equipment was used.

Chemical Control – Use of herbicides for controlling invasive plant species poses some potential risk of adverse impacts on human health and safety. Therefore, the PEIS (BLM 2007a) included a Human Health Risk Assessment (HHRA) to evaluate herbicide use on public lands. The HHRA addressed occupational receptors (who mix, load, transport, and apply herbicides) and public receptors (hikers, hunters, and anglers; swimmers, berry pickers; Native Americans; and residents).

Prescribed Fire – Sensitive members of the public and workers could experience discomfort from prescribed burning, including eye, nose, and lung irritation. Workers could also suffer burns from fires. The public could be exposed to similar risks if the fire escaped from the treatment area.

Hydrology and Water Quality

The South Fork American River is a major waterway in El Dorado County, flowing from the crest of the Sierra Nevada Mountains down the western slope where it joins the North Fork of the American River in Folsom Lake. The lower American River then travels down to the Sacramento Valley and into the Sacramento River and eventually flows into the San Francisco Bay. Rainfall within the project area differs greatly. At Folsom Dam, average rainfall ranges from 32.5 inches per year, while at Placerville, only 14 miles away, average rainfall ranges around 53.6 inches per year.

The importance of water quality is evident in the American River Watershed. El Dorado County relies on the water for agricultural and municipal purposes as does the metropolitan area of Sacramento. The South Fork American River is the most popular river for commercial white water rafting in the Western United Sates. Annually, between 100 to 140 thousand visitors float the river on either privately-owned boats, or through the services of commercial outfitters. The main water source in the project area is the South Fork American which has been greatly altered since the 1850's, and has not had a natural unimpaired flow since before the Gold Rush. Water impoundments managed by PG&E, SMUD, and EID all effect the natural flow of the river. Water quality in the project area appears to be influenced by a wide variety of factors relating to man's influence on the environment. A major source of water quality degradation is related to

the coliform (fecal) group of bacteria. This may come from animal waste, defective septic tank leach fields, and other undocumented sources. The primary sources of contamination appear to be located upstream of the planning area, according to the County River Management Plan.

Invasive Species

Noxious weeds known to occur in the project area are noted in Table 1, along with their corresponding areas of occurrence. Of the vegetation communities within the project area, some are more likely than others to contain infestations of noxious weeds and other invasive plants. Blue oak savannah and open grasslands have been have been seriously degraded by widespread infestations of non-native species such as YST and MDH and other invasive annual weeds. Riparian areas along the South Fork American River have been invaded by Scotch and French broom. Smaller infestations of other invasive weed species occur throughout the project area and were likely caused by historical grazing and continue to be spread by recreational use.

Barbed Goatgrass

Barbed goatgrass is an annual grass that grows in rangelands, grasslands, and oak woodlands. It is becoming a dominant grass in foothill grasslands of central California. Immature seed heads are often reddish or purplish. Seed heads are cylindrical and ultimately break apart into joints. Disarticulated joint ends are sharp and can injure livestock. Glume awns of upper spikelets are spreading and 4-8 cm long. This weed can directly injure livestock by lodging in their eyes or mouths, and is unpalatable to cattle (Cal-IPC 2012).

Bull Thistle

Bull thistle is a rosette-forming biennial. Leaf blades, especially those that are larger and deeply lobed, are rough to the touch like medium sandpaper and dark green. Most plants remain in the rosette stage for one year, then bolt, flower, and set seed in the second growing season. Flower heads are one to two inches wide and one and a half to two and a half inches high with deep purple flowers. A single flower head can produce from forty to over 250 seeds, and individual plants may have anywhere from one to 475 flower heads or more. Bull thistle invades a variety of wildland habitats, where it competes with and displaces native species, including forage species favored by native ungulates such as deer and elk (Cal-IPC 2012).

French and Scotch Broom

Both are perennial shrubs from six to ten feet tall. The two brooms are differentiated by seed pods and branches. Scotch broom has dark green branches with ridges, French broom has neither. The seed pods on Scotch broom have hair only along their seams instead of all over as on French broom. Broom seed pods, when ripe, burst open explosively and propel seeds up to 12 feet from the plant. Starting in the second year of growth, seed production is prodigious; in a single square-meter plot, researchers have counted more than 6,700 seeds. Furthermore, the seeds persist, remaining viable for at least 5 years and potentially for decades. Broom seeds often germinate with early winter rains, establishing a flush of new seedlings from December through July. Dense stands of broom change the structure of the invaded plant community, often increasing fire hazards by creating a “ladder” of woody material that can carry fire into trees. Brooms provide poor forage for native wildlife. The leaves and seeds are toxic. As nitrogen-fixing legumes, they can enrich soil nitrogen, which in turn can promote the growth of other weedy plant species once the broom has been removed (Cal-IPC 2012).

Italian Thistle

Italian thistle is an annual which varies in height from ankle to head high. Flower heads are covered with densely matted, cobwebby hairs. The thimble-sized, pink to purple flowers are clustered in groups of two to five. It is spread by seed via wind, vehicles, and animals. Seeds can disperse by wind an average of seventy-five feet from the parent plant and can travel more than 325 feet in strong winds. Italian thistle dominates sites and excludes native species, crowding out forage plants in meadows and pastures. The blanketing effect of overwintering rosettes can severely reduce the establishment of other plants, as the leaves of the rosette can become erect in dense stands. Most animals avoid grazing it because of its spines. The spines also discourage grazing on neighboring forage species (Cal-IPC 2012).

Klamathweed

An erect perennial up to 1.2 m tall, with rhizomes and showy, bright yellow flowers. Foliage is dotted with tiny translucent and black oil glands that contain hypericin, a fluorescent red pigment that is toxic to livestock when consumed in quantity. Leaves are opposite, elliptic-oblong to linear. Taproots are stout with many branched lateral roots, to ~ 1.5 m deep. Rhizomes develop just below the soil surface from the crown and can extend outwards to ~ 0.5 m. New shoots grow from the crown and rhizomes in early spring. Fragmented rhizomes can develop new plants. Flowers are bright yellow, ~ 2 cm in diameter, clustered at the stem tips. Reproduces by seed and vegetatively from rhizomes. Seed and capsules disperse with water and adhere to machinery, tires, shoes, clothing, and feet, fur, or feathers of animals. Seed can remain viable for ~10 years or more in the soil. Plants typically produce an average of 15,000-33,000 seeds per plant (CDFA 2012). A biocontrol for this weed, Klamathweed beetle (*Chrysolina quadrigemina*), is widely dispersed in Northern California and El Dorado County where they help to control Klamathweed; however, the size of Klamathweed infestations fluctuate, which is true of most invasives that are controlled by a biocontrol agent.

Medusahead

MDH is a nonnative, cool-season annual grass. Plants produce tillers, but very few leaves. MDH has a distinctive flowerhead with two types of awns: both are flat, but the longer of the two contains barbs that point upward. MDH-dominated stands usually have more than 100 plants/ft^2. MDH maintains a short-lived seedbank. Plants produce up to 6,000 seeds/ft^2 of soil, propagating dense stands in succeeding years. Animals, wind, and water disperse the seed, and spread is rapid. A long, rough awn aids in animal dispersal of seed, and MDH often first establishes along domestic sheep and cow trails. Seeds are dispersed primarily from the coats and intestinal tracts of grazing animals. Seeds may germinate in fall, winter, or spring; fall germination is most common. Seedlings from all seasons produce seeds by early summer. The introduction and subsequent rapid spread of MDH has caused serious management concern because of its rapid migration, vigorous competitive nature, and low forage value. MDH invasion has shifted the balance from a shrub/perennial grass ecosystem to an annual grass-dominated ecosystem (BLM 2006).

Milk Thistle

A biennial or winter annual with stout, ridged and generally branching stems up to 6 feet tall. The flowers are large, reddish purple, with leathery spine-tipped bracts. Plants develop large (up to 3 feet in diameter) rosettes that block light to nearby vegetation and suppress germination and

growth. Dead plant skeletons continue to stand for several months, keeping an area bare of other vegetation. Infestations can be dense and dominate pasture. In nutrient enriched sites (ex. ruderal areas), where milk thistle grows more vigorously (than in un-enriched sites), species diversity can be considerably lower. Seeds can remain viable for at least 9 years. Dense stands in California can produce 1.4 million viable seeds per acre. One study found plants could produce as many as 6350 seeds/plant (Cal-IPC 2012).

Oblong Spurge

This conspicuous perennial plant grows up to three feet tall and has red stems, bright green, oblong leaves, and showy yellow bracts surrounding the small flowers. A close relative of leafy spurge, which has devastated rangelands across Montana, the Dakotas, and other western states, oblong spurge produces a white latex sap when the stems are broken, which can cause skin and eye irritation in humans, as well as digestive problems for grazing animals. The plant reproduces both by seed and through a vigorous root system, which makes control efforts extremely difficult (CDFA 2012).

Rush Skeletonweed

This species is an herbaceous perennial or biennial with rigid, wiry flowering stems to 1 meter (m) tall with milky sap. Flowering stems are produced in early summer and each flower head consists of 7-12 bright yellow flowers. One plant can produce 15,000-20,000 seeds per season. Plants exist as basal rosettes until flowering stems develop at maturity and rosette leaves whither. Taproots become somewhat woody with age and can penetrate soil to depths of 2-3 m or more. Roots are easily fragmented; with pieces as small as 1-2 cm producing new rosettes of depths up to 1 m. Plants are highly competitive for water and nutrients. Seeds primarily disperse with wind, but also by water, animals, and human activity (CDFA 2012).

Tocalote (Malta Starthistle)

In California, tocalote grows as a winter annual, producing one to several solitary or clustered, spiny, yellow-flowered heads during spring and early summer. The pre-bolting vegetative characteristics of this species are similar to those of yellow starthistle. The stem leaves extend downward, giving the stems a winged appearance. Flowerheads are generally produced from April through June (approximately four to six weeks before yellow starthistle begins flowering). Flowering plants range from two to thirty-six inches in height and may change from green to bluish green as they senesce. The main phyllaries are pinnately spined with an apical, needle-like spine and a few, much smaller, lateral spinelets. Dense infestations of tocalote displace native plants and animals, threatening natural ecosystems and nature reserves. Long-term ingestion by horses causes a chewing disease (Cal-IPC 2012).

Tree of Heaven

Tree-of-heaven is a deciduous tree thirty to sixty-five feet high, with gray bark, and generally with root sprouts. It has large compound leaves with several circular glands on the underside of most leaflets. The crushed foliage has an unpleasant odor. By producing abundant root sprouts, tree-of-heaven creates thickets of considerable area, displacing native vegetation. Although it may suffer from root competition by other trees already established, usually it competes successfully with other plants. In California its most significant displacement of native vegetation is in riparian zones. It also produces allelopathic chemicals that may contribute to

displacement of native vegetation. A high degree of shade tolerance gives ailanthus a competitive edge over other plant species (Cal-IPC 2012).

Yellow Starthistle

YST is a long-lived winter annual with a deep, vigorous taproot, and bright, thistle-like yellow flowers with sharp spines surrounding the base. Seed output can be as high at 30,000 seeds per square meter, with about 95% of the seed being viable soon after dispersal. Most seeds germinate within a year of dispersal, but some can remain viable in the soil for more than three years. YST seeds germinate from fall through spring. After germinating, the plant initially allocates most of its resources to root growth. By late spring, roots can extend over 3 feet into the soil profile, although the portion above ground is a relatively small basal rosette. This allows YST to out-compete shallow-rooted annual species during the drier summer months when moisture availability is limited near the soil surface. It also helps explain why YST survives well into the summer, long after other annual species have dried up, and why it can re-grow after top removal from mowing or grazing (BLM 2006).

Soils

Most of the parent materials for the residual soils on the parcels along the South Fork American River are either common granitic or metasedimentary or metavolcanic rock types, common in the Sierra Nevada foothills. In the canyon bottoms and riparian areas especially, are sediments of mixed origin. In this area there are few rare species associated with these common substrates. In the westernmost portion of the Norton Ravine Unit close to the river, there is about 60 acres with gabbro substrate that support northern gabbroic mixed chaparral, the plant community most characteristic of the Pine Hill formation of western El Dorado County which is known to support numerous rare plant species.

The Norton Ravine area has three important geologic substrates that help to determine vegetation distribution; gabbro, serpentine and common rock types. Because two of these rock types are rare, and each supports distinctive vegetation, portions of this area, or the entire area, may deserve special management attention for biological resources. The southwest portion of the area, north of the South Fork American River is underlain by gabbro. A recent preliminary plant survey has identified the presence of two sensitive plant species present on this portion of the Norton Ravine parcel. The soils of this parcel are made up primarily of Rescue soil series derived from gabbro bedrock, except in the canyon bottom where there are alluvial and terrace deposits of the South Fork American River.

Recreation

The project area falls within the South Fork American River SRMA. SRMAs are identified to address areas where recreation is the management focus. The South Fork American River SRMA receives a high amount of recreation due to the presence of the South Fork American River and a large trail network which encourage numerous recreational opportunities such as horseback riding, mountain biking, hiking, camping, fishing, kayaking, rafting, and gold panning. Prospecting – the recreational search for gold – has a special significance along the South Fork American because of the river's role in the California Gold Rush. Much of this activity takes

place in the river itself, but several tributaries were also historically good sources of placer gold.

In more recent times, the South Fork American River has become one of the most heavily used rivers in America for white water rafting and kayaking. About 30 years ago, commercial white water rafting began to increase in popularity along the South Fork. It continued to increase until the mid-1990's when it peaked, and then dropped off slightly. The South Fork offers outstanding opportunities for white water recreation because of its proximity to major population centers, and year-round flows. It has become one of the nation's most popular rivers for a number of reasons, including short shuttles between access points, several trip options, high spring flows, and dependable boating flows during the summer months when other rivers have dropped too low.

Vegetation

The plant communities in the vicinity of the South Fork American River have been classified as part of the Foothill Pine Belt, which encompasses a wide variety of plant habitats (i.e., montane hardwood-conifer, blue oak-foothill pine, mixed chaparral, riverine, and valley foothill riparian). Dominant habitats in the project area include open grassland, oak savannah, and mixed conifer forest on the north-facing slopes. The area's natural vegetation has been greatly altered since the time of the Gold Rush. Presently, a large portion of the open grassland and blue oak woodlands have been degraded by invasive plant communities.

The vegetation of the Greenwood Creek and Cronan Ranch parcels can be divided into four main regions and plant communities. On the uplands there are forest stands on the north and northeast facing slopes of both Clark Mountain and the hill west of Hastings Creek. On the south facing slopes of the hills north of the South Fork American River there is oak woodland and chaparral. Grasslands dominate the relatively flat to rolling portions of the parcel south of Highway 49. Along Greenwood Creek, Hastings Creek and the South Fork American River there are well developed riparian areas.

South facing hill slopes north of the American River are dominated by interior live oak, with black oak, California buckeye, toyon, buckbrush, white leaf manzanita, keckiella, California coffeeberry, poison oak and pipe vine. The north facing slope of Clark Mountain supports a forest stand dominated by ponderosa pine and black oak. Gray pine and incense cedar become prominent on the lower slopes. Douglas fir is a minor component. Similar vegetation is found on north facing slopes west of Hastings Creek.

The riparian area along the South Fork American River is broad and diverse. Among the prominent species are sand bar willow, arroyo willow, shining willow, valley oak, Oregon ash, white alder, Fremont cottonwood, button willow, coyote brush, mock orange, California wild grape, deer grass and scotch broom.

Grasslands are composed largely of non-native annual species. Especially in the grassland area, invasive plants are becoming monocultures, displacing both native species and other non-native species. The grassland associated invasive species of the most concern are YST, MDH, rush skeleton weed and oblong spurge. Scotch broom, which occurs mainly in woodland, forest and riparian communities, is also a threat to the ecosystem. Rush skeletonweed has only become

common in this region in the last ten years; however, the rapid increase of this species is of particular concern.

The vegetation at the Dave Moore Nature Area is predominantly interior live oak woodland, with riparian forest along the South Fork American River. This area was heavily mined historically but has mostly revegetated. There have been more recent disturbances resulting from a sand and gravel operation that also led to an associated timber harvest. Portions of this area that did not recover naturally were planted with locally adapted native species.

White alder, black cottonwood, willow and bigleaf maple are found along the shores of the river. The natural regeneration of the riparian forest appears to be facilitated by the accretion of sediments along the riverbanks, creating more hospitable conditions for plant growth than previously possible when the area was reduced to bare rock and gravel as a result of mining. Rockiness of the site adjacent to the river has produced a narrow, more open strip of riparian forest consisting of deciduous species and intermixed with trees and shrubs more characteristic of drier upland habitats. On cool north-facing slopes along the river canyon, madrone, ponderosa pine, Douglas fir, and incense cedar are also found.

Away from the immediate course of the river and its benches, the site is mostly covered in interior live oak woodland with a diverse complement of woody species. Interior live, blue, black and valley oak, gray and ponderosa pine are the primary tree species. Interspersed in the oak woodland are patches of chaparral with chamise, white leaf manzanita, toyon, coyote brush, buck brush, and silver lupine. Invasive Scotch and French broom are also extremely common and are widely dispersed throughout the site. YST is dominant in some disturbed openings, especially near the parking area.

The Norton Ravine area is an exceptionally rich and scenic mix of habitats that include riparian, mixed chaparral, grassland, blue oak woodland and montane hardwood. This area also contains sensitive plant species on rare gabbro soils. The unit is composed of east-facing slopes with oak woodlands, grasslands, and patches of chaparral.

The largest serpentine exposure in the area runs in a wide east-west band through the middle of the area north of the river. Another serpentine outcrop occurs in the southern portion of the L-shaped parcel south of the river. The serpentine is mostly covered by dense chamise chaparral. Associated shrubs include toyon, whiteleaf manzanita, buckbrush, interior live oak, bush monkey flower and pitcher sage, with Sonoma sage in the understory openings, and occasional gray pines above.

Well-developed riparian vegetation occurs along the South Fork American River and Norton Ravine. Near the confluence of the two streams prominent species include white alder, valley oak, Oregon ash, sand bar willow, dusky willow, Himalayan blackberry, California wild grape, mugwort and poison hemlock. Small drainages through the serpentine body north of the river also support some riparian vegetation.

Special Status Plant Species:

A small occurrence of one Federally threatened species, Layne's butterweed (*Packera layneae*), found on the adjacent Pine Hill Preserve, is known to occur within the Norton Ravine parcel along the South Fork American River Trail north of the river. Other special status plant species which also occur within the Pine Hill Preserve have been found in the southwest corner of the Norton Ravine unit. These include the BLM sensitive El Dorado mule ears (*Wyethia reticulata*) and Red Hills soaproot (*Chlorogalum grandiflorum*). The former is an endemic to the gabbro formation of western El Dorado County and is included in the "Recovery Plan for the Gabbro Soil Plants of the Central Sierra Nevada Foothills." The soil characteristics of this area also indicate some potential for other sensitive or listed plant species to occur, although none were found in the course of a preliminary survey of a portion of the parcel. Another BLM sensitive species, Brandegee's clarkia (*Clarkia biloba* subsp. *brandegeae*), is known to occur within the Cronan Ranch and Greenwood Creek parcels.

Visual Resources

All lands within the project area are classified as VRM Class II with the exception of a portion of the Greenwood Creek parcel – south of the river, Clark Mountain – which is classified as VRM Class I. Class I requires preservation of the existing character of the landscape and states that changes generally should not occur whereas Class II requires that changes to the characteristic landscape may be seen, but should not attract the attention of the casual observer.

Wildlife

Wildlife within the project area is typical of wildlife throughout the lower foothills of the Sierra Nevada. Because of the mix of habitat types, the area supports significantly diverse wildlife populations. Over 200 species of birds may occur seasonally, or as residents, including wintering bald eagles. At least 94 species of mammals are residents, including mountain lions, bobcats, foxes, coyotes, deer, and ring-tail cats. The river itself supports rainbow and brown trout, and a variety of native fishes. The planning area contains numerous habitats including riparian, riverine, blue oak-foothill pine, mixed chaparral/chamise, montane hardwood-conifer, montane hardwood-oak and annual grasslands.

Special Status Wildlife Species:

Several sensitive species are also found in or may pass through the planning area such as:

U.S. Fish and Wildlife Service (USFWS) *Species of Concern*: Western Pond Turtle, Bald Eagle, Foothill Yellow Legged Frog
BLM *Sensitive Species:* Western Mastiff Bat, Townsend's Big Eared Bat, and Foothill Yellow Legged Frog
CDFG *Species of Special Concern*: Foothill Yellow Legged Frog

The Norton Ravine area is an exceptionally rich and scenic mix of habitats that include riparian, mixed chaparral, grassland, blue oak woodland and montane hardwood. The perennial streams in this area have been identified by the CDFG as potential habitat for the foothill yellow legged frog.

Valley elderberry longhorn beetle (VELB) is listed as threatened under the Federal Endangered Species Act. The beetle has only been found in association with its host plant, elderberry, which is a common component of the remaining riparian forests and adjacent upland habitats of California's Central Valley and associated foothills up to 3,000 feet. *Sambucus* can occur in several plant communities: riparian forest, savanna or grassland, oak woodland, and mixed chaparral-foothill woodland. There are known occurrences of elderberry shrubs within the project area. The VELB is more frequently encountered in riparian forest margin and elderberry savanna than other situations. Elderberry shrubs/trees with many exit holes are most often large, mature plants; young stands are seldom infested. The VELB seems to prefer stems for larval development and pupation which are larger than an inch or two in diameter. The beetle is most likely to occur in situations where plants are not isolated from one another.

Adults feed on the foliage and perhaps flowers, and are present from March through early June. During this period the beetles mate, and the females lay eggs on living elderberry plants. The female places the eggs singly or in small groups in bark crevices or at the junctions of stem/trunk or leaf petiole/stem. Presumably the eggs hatch shortly after they are laid. Larvae bore into the pith of larger stems and roots. When larvae are ready to pupate, they work their way up from the roots through the pith of the elderberry, open an emergence hole through the bark and return to the pith for pupation. The entire life cycle encompasses two years; however, the duration of each life stage is unknown. Adult emergence occurs at about the same time the elderberry flowers.

4.0 Environmental Effects

4.1 Impacts of the Proposed Action and Alternatives

Air Quality

Alternative A: Proposed Action

Prescribed burning emissions contain particulate matter as well as volatile organic compounds, which are precursors to ozone. The BLM will coordinate with the El Dorado County Air Quality Management District to burn only on days when air quality will not be significantly affected. Burning prescription parameters such as air stability and wind direction will encourage dispersion of emissions into the atmosphere and away from population centers. A smoke management plan and permit is attached to the Burn Plan for this project with further details of smoke dispersal and monitoring. Smoke may impact nearby residents and may settle in the valley during the evening hours following the burn. The relatively short duration of the proposed burn would limit the scope and duration of effects. Because public notification will take place prior to ignition, sensitive individuals would be alerted so that they can take any precautions to limit their exposure to the smoke.

Dust would be generated by fire trucks and support vehicles during implementation of the prescribed burn. The amount of dust is not expected to be any higher than normal vehicle traffic and only minor short-term effects are anticipated.

Herbicide applications should not affect air quality. Measures to reduce drift will be identified in the Pesticide Use Permit. A Project Design Feature to avoid drift will not allow spraying if wind speeds exceed 10 mph.

Alternative B: No Action (Current Management)

Under the No Action Alternative, no smoke or particulate matter would be produced because there would be no prescribed burning. No herbicides would be applied under this alternative which would eliminate the slight risk of herbicide drift. However, invasive species such as YST and MDH, which would have been treated using a combination of prescribed fire and herbicides, would continue to expand in the project area and would likely need to be addressed by the BLM in the future when they have potentially spread into a larger portion of the area.

Alternative C

Effects to air quality would be similar under Alternative C as for the No Action Alternative with the exception that herbicide control would be used under this alternative and therefore a slight risk of herbicide drift could occur. The Project Design Feature under the Proposed Action to avoid herbicide drift would also apply under this alternative. No prescribed fire would take place so there would be no smoke or particulate matter produced.

Cultural Resources

Alternative A: Proposed Action

The Proposed Action is in the process of being analyzed by the BLM archaeologist to determine whether it would affect significant cultural resources, in accordance with Section 106 of the National Historic Preservation Act. The analysis included a backgrounds record search, Native American consultation, and field inventory (where necessary since much of the project area has been inventoried for cultural resources by BLM archaeologists over the years).

Direct impacts to cultural resources, particularly archaeological sites, can happen any time the ground is subject to alteration. For archaeological sites, which are most prevalent type of cultural resource in the project area, direct impacts could result from disturbance of surface and subsurface soils and sediments caused by constructing fire lines, applying herbicides using ATVs or other motorized vehicles off of authorized road and trails (especially when soil moisture levels are high), and digging or hand-pulling of weeds.

The effects of fire on cultural resources would vary depending on temperature and duration of exposure to heat. As a general rule, fire does not affect buried cultural materials; however, exposed cultural materials above the ground could be altered or damaged by fire. Cultural sites and features will be protected with a buffer (50’ or greater depending on the resource) to avoid fire damage. The construction of fire lines could damage cultural resources; therefore, fire lines will be placed away from archaeological sites. Vehicles and equipment needed to conduct the prescribed burn will not be staged on archaeological sites.

Herbicide application could also negatively impact traditional cultural practices of gathering plant materials important to local Native American tribes. Consultation would be undertaken with appropriate Native Americans to identify traditional collecting sites within the project area with plants that are of importance to the tribe and that might be affected by chemical treatments. Certain herbicides could also inadvertently pose a possible health risk through residues left on plants used for making traditional items such as baskets. The BLM has initiated Native American consultation by sending letters to local tribes to ascertain if they have any comments, questions, suggestions, or concerns regarding this Proposed Action. Of particular relevance are inquiries as to whether there are traditional collecting areas in the project area. If traditional collecting sites are identified in the project area, the BLM will work with Native Americans to address any concerns. A no-spray zone will be established to avoid impacts to the collecting site and to ensure the safety of the traditional practitioners.

The best method to reduce or eliminate impacts will be to avoid all cultural resources that could potentially be harmed by the proposed treatments. Sensitive cultural resources in the project area will be identified and avoided. Other treatment methods that will not affect these resources will be applied. Therefore, there will be no affects to cultural resources potentially eligible for the National Register of Historic Places.

Alternative B: No Action (Current Management)

This alternative would only implement physical control and mowing but would not include the use of herbicides or prescribed fire. Potential impacts to cultural resources from physical control and mowing would be similar to the Proposed Action. Traditional collecting sites or cultural materials would not be affected by herbicides or fire under this alternative. In the absence of fire and chemical controls, there would be an increase in the use of physical control techniques, but the total area treated annually would be much less than with herbicides and prescribed fire due to the limitations and inefficiencies of these methods. While native plants identified as being important in traditional subsistence, religious, or other cultural practices could benefit from physical control techniques and the non-use of chemicals, the spread of invasive species may or may not increase erosion on cultural sites depending upon the nature of the invasive species. If weed encroachment causes soil erosion, artifacts may be exposed and collected or displaced; losing their context. The direct loss of cultural resources due to erosion and exposure as well as replacement of native species would occur over the long term. As weeds spread, native plants available for use by Native American groups would be reduced.

Alternative C

Potential impacts to cultural resources from prescribed fire would not occur under this alternative. Impacts from herbicide use and physical control methods would be similar to those under the Proposed Action. Large infestations of YST and MDH would continue to spread without the use of prescribed fire, reducing native plants that are available for use by Native Americans.

Human Health and Safety

Alternative A: Proposed Action

Physical Control - The risks to the operator from using a weed eater or mower would be minimized by wearing appropriate Personal Protective Equipment and conducting a tailgate safety session prior to use. Mowers and string trimmers would be operated well away from public users.

Chemical Control - Exposure risks to occupational receptors consist primarily of direct exposure (whether through the skin, inhalation, or incidental ingestion) by workers who mix, transport, or apply the herbicides. Greatest exposure doses are likely to be associated with mixing herbicides, pouring the contents into containers for use in application, and cleaning up any residue or minor spillage. An additional risk to applicators results from exposure via dermal contact, inhalation, or incidental ingestion while walking or riding/driving through an herbicide mist. Most occupational exposures result in temporary skin or eye irritation or in other short-term effects such as nausea, dizziness, or reversible nervous system abnormalities. Long-term effects are much less common but can include damage to organs, the nervous system, or the immune system and potentially inheritable mutations that can be passed on to offspring.

Both the short-term and long-term effects to occupational receptors can be greatly reduced by adherence to operational safety guidelines, use of protective clothing, equipment checks, and personal hygiene. BLM has attempted to minimize risks to applicators involved with herbicide treatments on public lands by specifying that their use be limited to certified herbicide applicators, except in a few special circumstances (e.g., spot applications to one or a few plants by trained BLM personnel using pre-mixed, consumer-grade herbicides). Professionals who are trained, experienced in handling chemicals, and use suitable personal protective equipment are much less likely to be exposed at potentially toxic levels than are those who use herbicides infrequently and may be unaware of the risks and how to minimize them.

Public receptors within the project area consist mostly of residents and outdoor recreationists. These receptors would be exposed less frequently and at much lower doses than would occupational workers who deal with herbicides regularly and at higher concentrations.
The HHRA portion of the PEIS (BLM 2007a) addressed a total 24 herbicide active ingredients, of which 18 are currently approved for use on BLM lands, including clopyralid, dicamba, glyphosate, and triclopyr. Risks to humans were evaluated in relation to both occupational and public receptors, based on the toxicity of each compound and the assumed exposure dose under three assumed scenarios: routine exposure at typical application rates, routine exposure at maximum application rates, and accidental exposure. Routine exposure of workers consists of dermal contact, inhalation, and incidental ingestion while mixing or applying an herbicide. Accidental exposure of workers results from a spill or direct spray onto the skin. For public receptors, routine exposures result from typical uses of public lands that have been treated, or of both public and private lands onto which an herbicide has drifted. These exposures include dermal (skin) contact with foliage or surface water, inhalation of a pesticide mist, or ingestion of fruits onto which an herbicide has settled. Accidental exposures of the public include entering an area that is being or has recently been treated or (for some compounds) drinking water or eating fish from a waterbody into which the compound has been spilled.

Four of the herbicides proposed for use in the project area - clopyralid, dicamba, glyphosate, and triclopyr - showed slight to very slight toxicity to humans and no carcinogenicity. Risks were generally rated as low to none for both receptor groups and all three exposure rates. The HHRA portion of the PEIS found no risks to humans from the inert ingredients associated with the herbicides, including adjuvants. While the BLM has not yet completed an HHRA for aminopyralid, this chemical is currently approved for use by the EPA and in the state of CA, and is used by private, State and Federal agencies (e.g., U.S. Forest Service and National Park Service) to treat YST. It is considered to be the most effective chemical for YST with the least amount of toxicity.

To minimize risks to occupational and public receptors from exposure to herbicides, implementation of the Proposed Action would follow the Project Design Features and SOPs and Mitigation Measures in Appendices A and B.

Prescribed Fire – Risks from prescribed fire would be minimized or avoided by following a fire management plan, conducting burns during periods of favorable meteorological conditions to reduce smoke effects to the public, and by using proper equipment and following proper safety procedures. Nearby residents who could be affected by smoke would be notified of the planned burn well ahead of time. Adequate safety buffers would be maintained between the treatment area and residences and other structures.

Alternative B: No Action (Current Management)

Implementing the No Action Alternative would preclude the use of prescribed fire and herbicides to control weeds in the project area and thus eliminate the associated risks to occupational and public receptors from these control methods. This would be accompanied by a greatly diminished ability to reduce the current acreage of invasive plants and prevent new or expanded infestations. While physical control methods are effective for small populations of weeds, they are limited in their effectiveness for treating large populations or more aggressive species. An inability by BLM to effectively control weeds in the project area may result in weed expansion and new infestations.

Alternative C

The associated risks to occupational and public receptors from prescribed fire would not occur under Alternative C. Risks from herbicide use and physical control methods would be similar to those under the Proposed Action.

Hydrology & Water Quality

Alternative A: Proposed Action

Invasive plants can create conditions that modify water quantity and quality. Directly or indirectly, invasive plants can affect streambank stability and sediment input and the turbidity, temperature, dissolved oxygen, and pH of the stream. Water uptake by some invasive plants such as YST can also reduce water quantity. Weed treatments have the potential to affect both surface water and groundwater quality and quantity. Vegetation removal could affect surface water by

increasing surface runoff, promoting erosion and sedimentation, reducing shading and increasing water temperature, and limiting the amount of organic debris entering water bodies. In addition, even some handheld equipment used in invasive plant treatment has the potential to disturb or displace soil, making the soil more vulnerable to erosion. However, impacts to water quality from physical treatments would be minor and short-term, as soil disturbance would be minimal from treatments such as pulling or brush cutting due to the small size of treatment areas.

Chemical treatments have the potential to negatively affect both surface water and groundwater quality, particularly if applied at concentrations that exceed label requirements. Herbicides can reach surface water bodies through drift and the airborne movement of herbicides beyond the treatment area. Three factors contribute to drift: application technique, weather conditions (wind speed and air temperature), and applicator error. Herbicides may also affect surface water and alluvial groundwater primarily as a result of unintentional spills or movement of herbicides from the upland sites into aquatic systems, as well as through additional sedimentation stemming from loss of vegetation cover. Some herbicides have the additional potential to infiltrate into groundwater, where attenuation and breakdown of the chemical may be slow.

Treatment with herbicides would follow a number of SOPs and mitigation measures outlined in Appendices A and B. No broadcast spraying will occur within 25' of open water and during spot spraying a 10’ buffer from open water will be observed. Spot spraying would result in the application of only a small amount of herbicide. No spraying will occur if rain is predicted within 24 hours. These measures would minimize the possibility of accidental contamination of water bodies and groundwater by herbicides due to runoff, drift, misapplication/spills, and leaching. Aquatic labeled herbicides would not impact water quality if used according to label rates of application. Drift will be minimized by applying the SOP that calls for canceling spraying when wind speeds exceed 10 miles per hour. Hand spraying itself minimizes drift by the low height at which the spray is released and the much lower volume of spray mix needed to only spray target plants.

The potential effects of fire on water resources would depend largely on the severity and size of the fire, with a low severity burn being less likely to degrade water quality and quantity than a severe burn, and a small fire affecting a smaller surface area than a large fire. The burning of vegetation would be expected to lead to an increase in surface runoff and sediment inputs to water, and a decrease in infiltration and thus groundwater discharge. Burns in the project area would be of moderate to high intensity and small enough in size that a large vegetated buffer would remain between the burned area and waterways to reduce sedimentation. Reestablishment of vegetation in the burned area would be expected to occur within one to two growing seasons following the fire. Use of ground-disturbing fire equipment and firelines on erosive and/or steep slopes can exacerbate erosion and sedimentation; however, limiting the use of fire trucks and equipment to roads and previously disturbed areas can reduce soil loss.

In summary, reducing the number of acres degraded by weed infestations would reduce sedimentation in water bodies, improve nutrient cycling, and help return the landscape to normal fire cycles (BLM 2007a). This project should have little if any effect on the hydrology of the South Fork of the American River or any other waterways in the project area. Water quality effects should be negligible due to the incorporation of SOPS and mitigation measures. Physical

weed removal would only disturb small amounts of soil and should not result in increased erosion. If well-vegetated buffers between treated areas and water bodies are left untreated, they can intercept herbicides and mobilized sediment, reducing the potential for these contaminants to reach surface water. If properly applied, the weed treatments in the Proposed Action would improve water quality and quantity, thus enhancing fish and wildlife habitat and recreational opportunities in the long term.

Alternative B: No Action (Current Management)

This alternative would result in the least acres of invasive plants treated annually because of the increased labor, time, and cost associated with physical control options. Consequently invasive weeds would spread at a faster rate than under other alternatives. As a result, benefits to surface water from weed treatments in the form of water quantity and quality would be fewer and less extensive than in any of the other alternatives. While some short-term reduction in water body sedimentation would result from reduced weed treatment, in the long term water bodies would receive more sediment as a result of increased fire hazard and the decreased ability of plant roots to hold soil in place. On the other hand, eliminating herbicide use would also eliminate the possibility of herbicide drift and runoff into water bodies, and herbicide infiltration into alluvial aquifers. The use of herbicide-related mitigation measures under the other two alternatives would minimize the risks associated with herbicides, reducing the potential benefits of reliance on physical control methods as proposed in this alternative.

Alternative C

The impact of this alternative on surface water and groundwater would be intermediate between those of Alternative A (which includes both prescribed fire and herbicides) and Alternative B (which includes neither prescribed fire nor herbicides). There would be far fewer acres of weeds treated than under the Proposed Action due to no prescribed fire. Sedimentation and erosion following prescribed fire would not occur under this alternative. Similar to the Proposed Action, there would be a risk of herbicide drift and runoff into water bodies, and herbicide infiltration into alluvial aquifers. The use of herbicide-related Project Design Features as found under the Proposed Action would minimize the risks associated with herbicides. A short-term reduction in water body sedimentation would result from reduced weed treatments; however, in the long term water bodies would be degraded in water quality and quantity as invasive species continue to degrade habitat in the project area.

Invasive Species

Alternative A: Proposed Action

In general, vegetation treatments have the potential to affect most plant species in much the same way: all are intended to cause mortality or injury to target plants, which may vary in intensity and extent. Prescribed fire and herbicides offer an effective and often resource-efficient means of treating and managing undesirable vegetation across a larger landscape area. Short-term loss of vegetation in these areas would occur until more desirable species filled in the bare areas.

Physical methods are often more time and labor intensive, and can create soil disturbance which could lead to additional weed establishment.

Eradicating and/or controlling weed infestations benefits native plant communities by decreasing the growth, seed production, and vigor of undesirable species, thereby releasing native species from much of this competition. However, if too little vegetation remains following treatment, other weeds may invade the area. To minimize this potential, areas with a minor component of desirable species or that must be treated with a non-selective herbicide to control the targeted species may be revegetated following treatment. Seeding or interseeding these types of areas can hasten the establishment of desirable native species and help prevent colonization by weeds. Revegetation can also disturb the soil and create conditions favorable for weeds if the seeded species do not become established. Monitoring of revegetated areas is critical to ensure that the area is recovering as intended or, if not, provide a basis for additional weed control and/or seeding.

Under the Proposed Action, the BLM would be able to treat the most weed-infested acres per year using physical, chemical, and prescribed fire controls. The proposed IWM approach, with its full range of treatment options, would allow for early detection and rapid response to new weed infestations as well as a more proactive, coordinated weed management approach for the project area. Large infestations of YST and MDH, which would not be treated under the other two alternatives due to the lack of effective control options, could be effectively treated with a combination of fire and herbicides. Of all the alternatives, the Proposed Action would result in the most invasive plants treated and the least chance for weed expansion.

Alternative B: No Action (Current Management)

Under the No Action Alternative, many less acres would be treated annually than under the Proposed Action because of the increased labor, time, and cost associated with physical control options; therefore, invasive species would spread at a faster rate. Because prescribed fire and herbicides would not be used under this alternative, treatments would be practicable only for small weed populations or individual plants due to limited resources. Mowing and use of hand-held brush cutters would continue to occur along trails to keep them accessible for recreational use.

Alternative C

The lack of prescribed fire would greatly reduce the total area of weed treatments possible each year compared to the Proposed Action; however, due to the ability to use herbicides under this alternative, more acres of weeds would be treated than under Alternative B. The rate of weed expansion would be intermediate between that of Alternative A and Alternative B.

Recreation

Alternative A: Proposed Action

Weed treatments using prescribed fire, chemical, and physical controls would have some short-term negative impacts but more substantial long-term positive impacts. In general, direct impacts

to recreational users and opportunities would result primarily from temporary closures of areas being treated. These closures would be implemented to protect human health and safety and would be based on the specific treatment method.

Manual controls, to be used for small populations of weeds, would not require any closures. Mowing and weed-whacking or other methods that could represent a safety hazard in the immediate vicinity during the period of active treatment may not require any closures other than setbacks from areas of active control. Prescribed burns would require the closure of burn areas to visitors during burn activities. People recreating in nearby areas would be able to see and perhaps smell smoke. Because smoke impairs visibility, views of the landscape could be blocked during burning. These effects would reduce the recreation experience but would typically only last as long as the burn treatment itself. Visitors may also acknowledge indirect, short-term, site-specific negative effects associated with charred vegetation following prescribed fire. Visitation to a prescribed burn area could decline in the short term, but would likely increase in the long term as a result of habitat improvement.

Chemical controls would have potential for direct adverse impacts due to the slight toxicity of some compounds to human receptors (see Human Health and Safety). This risk of toxic exposure could result from accidental direct spray, contact with freshly sprayed foliage by walking through a treatment area, inhalation or incidental ingestion of aerial drift outside a sprayed area, and ingestion of berries and other fruits that have been sprayed directly. Public use restrictions would be required following herbicide applications and times would vary depending on the chemical applied: 4-hours for glyphosate, 12-hours for clopyralid, 24-hours for dicamba, and 48-hours for triclopyr and aminopyralid. The day of spraying, signs would be posted and temporary closures implemented. If there are visitors in the area, they would be asked to leave the immediate vicinity of target sites before they are sprayed, so no visitors are subjected to spray drift.

Visitors may be impacted by the inconvenience associated with the temporary closure of treated areas, especially if they made plans and traveled to a site expecting that it would be open. Visitors may also acknowledge indirect, short-term, site-specific negative effects associated with dead or dying vegetation following herbicide application. However, the Proposed Action would result in the most long-term benefits to recreationists due to the most acres of invasive weeds treated, which would result in more habitat improvement and improved recreation access which should outweigh the short-term negative impacts.

Alternative B: No Action (Current Management)

Relying solely on physical treatment methods and mowing for invasive species control would avoid the short-term conflicts with visitors resulting from temporary closures of areas for burning or herbicide application and from a decrease in visual quality due to dead, dying, or charred vegetation in areas of recreational use. The risk of exposure to herbicides in the project area would be eliminated. However, over the long term, weed infestations would continue to expand and recreationists would be impacted by the decline in the quality of the recreational opportunity, both aesthetically and physically, i.e., from restricted access due to spiny weeds like YST.

Alternative C

Short-term adverse and long-term beneficial impacts of chemical control of weeds under this alternative would be similar to those under the Proposed Action. The principal difference between this alternative and the Proposed Action is that prescribed burning would not be used as a control method, which would reduce the adverse impacts to visitors associated with prescribed fire. Without prescribed fire, however, large infestations of YST and MDH would continue to expand and create adverse impacts to recreationists.

Soils

Alternative A: Proposed Action

Manual techniques, both hand pulling and digging of plants with a tool, produce loosened soil that is subject to erosion. However, these techniques would be used primarily where weed populations are small and because the disturbance with these techniques is relatively shallow, only a minimal portion of the soil surface would be affected. Herbicide applications may result in contact with soils, either intentionally for systemic treatments, or unintentionally as spills, overspray, spray drift, or windblown dust. Contact may also occur as a result of herbicide transport through plants to their roots where herbicide may be released into soil (BLM 2007a). The treatment method with the greatest potential for adverse short-term effects on soils is herbicide use on dense monotypic stands of weeds leading to substantial loss of vegetation cover. Application of the Project Design Features and the SOPs and mitigation measures in Appendices A and B would minimize soil disturbance and prohibit potentially erosive actions.

Prescribed fire could affect physical, chemical, and/or biological properties of soil. These changes could include changes in soil structure (e.g., decreased percentage of fines), porosity, salinity, cation exchange capacity, microfaunal diversity, or organic matter content. In addition, construction of fire lines with hand crews or a Sweco would create areas of exposed mineral soil, increasing the risk of soil erosion and sedimentation. Fire lines would be rehabilitated following burning to reduce these impacts.

The large majority of soil impacts resulting from the Proposed Action are expected to be positive; these would include the return of more stable soils, attenuated nutrient cycling, and a return to normal fire cycles (BLM 2007a). Over the long term, all treatments that remove invasive vegetation and restore native plants should enhance soil quality on public lands (BLM 2007a). For example, sites dominated by spotted knapweed (similar in growth form to YST) display substantially higher surface runoff and stream sediment yield than sites dominated by native perennial grasses (Lacey et al. 1989).

Alternative B: No Action (Current Management)

This alternative would result in the least amount of weeds treated annually because of the limited effectiveness and increased labor, time, and cost associated with the use of physical control methods. Invasive plants would spread at a faster rate. Potential impacts to soils from prescribed fire or herbicides would not occur under this alternative. While some short-term reduction in

potential erosion of treated areas would accompany the smaller amount of weed treatments, over the long term soils would suffer due to decreased soil quality and decreased ability of plant roots to hold soil in place in areas dominated by invasive species.

Alternative C

Potential impacts to soils from prescribed fire would not occur under this alternative. The potential negative impacts from herbicides would be the same as under the Proposed Action. The application of Project Design Features and SOPs and mitigation measures would minimize soil disturbance and prohibit potentially erosive actions. Large infestations of YST and MDH would continue to expand due to the lack of prescribed fire as a control option.

Vegetation

Alternative A: Proposed Action

All weed treatments would likely affect plant species composition of an area and might affect plant species diversity. Elimination or reduction of non-native species would benefit native plant communities by removing competition from weeds. This would provide more resources (e.g., water, light, and nutrients) to native plants, allowing them to reestablish sites previously dominated by weeds. Because certain herbicides target broadleaf species, non-broadleaf species like grasses may begin to dominate the site, changing the species composition. Use of herbicides that target broadleaf species could reduce or eliminate native forbs in the treated areas. This could result in a long-term change in the plant community composition. The less a native plant community is disrupted by treatment, the more likely it would be to retain or regain characteristics that could resist weed invasion.

Physical control methods would likely cause small amounts of soil disturbance which could increase soil erosion. Revegetation could create soil disturbance and lead to additional weed establishment and erosion if seeded (desirable) species did not successfully reoccupy the site. In general, the effects of manual treatment methods would be minimal, both because of the low level of environmental impact of this method and the limited area in which manual use is feasible. Mowing and brush cutting would have few lasting effects on native plant communities, as non-target species would typically be able to recover quickly by resprouting.

Herbicides could come into contact with and impact non-target plants through drift, runoff, wind transport, or accidental spills and direct spraying. Potential impacts could include one or more of the following: mortality, loss of photosynthetic foliage, reduced vigor, abnormal growth, or reduced reproductive output. Aminopyralid, clopyralid, dicamaba and triclopyr are selective herbicides which target only broadleaf plants, while glyphosate is a non-selective herbicide. As such, it is likely to damage or kill most of the plants that are sprayed. Plants could be crushed by trucks and/or ATVs during ground applications, and injury or mortality to plants could occur. Risks to non-target plants from spray drift are greater with smaller buffer zones between target and non-target vegetation and application from greater heights (i.e., ground application with a high boom). Application rate is a major factor in determining risk, with higher application rates associated with greater risk to plants.

Fire treatments would kill and injure plants, causing the most harm to species that are intolerant of fire. Fire would also stimulate the growth of certain plants, such as perennial grasses. Established perennial plants that can recover vegetatively would typically have a short-term competitive advantage over plants developing from seed because their well-developed root systems and stored energy reserves support rapid regrowth. The hope is that following burning, annual weeds such as YST and MDH would be at a disadvantage to perennial native species and would slowly be outcompeted if treatment methods are consistently implemented prior to weed seed maturation. Construction of fire lines by hand crews or a Sweco would damage or kill vegetation; however, fire lines would be rehabilitated following burning and vegetation should reestablish over time.

Under this alternative, the BLM would treat the most acres of weeds in the project area and the most extensive impacts to vegetation (both negative and positive) would result due to the larger treatment area. Alternative A would produce the greatest impacts to non-target native vegetation from the use of both prescribed fire and herbicide. However, benefits to native species due to weed reduction would far outweigh the risks which would be minimized through the use of Project Design Features and protective SOPs and mitigation measures (Appendices A and B).

Special Status Plant Species:

The abatement of invasive weeds in or near potential or occupied rare plant habitat should result in beneficial impacts for rare plant habitat. This is often related to the removal of competing invasive weeds and the reduction or elimination of invasive weed expansion into potential or occupied rare plant habitat. Removal of undesirable, competing vegetation could increase the health or vigor of existing populations, or increase suitable habitat of unoccupied sites. A Project Design Feature to protect special status plant species in the project area is a no-spray zone of 100' around rare plants during broadcast application of herbicides and a no-spray zone of 50’ during spot spraying. Invasive plants within this zone would be treated with physical control methods. Applicators will be trained to recognize rare plants in the project area. Fire would not be used to control invasive species within the Norton Ravine unit because weed populations aren’t extensive enough to warrant the use of prescribed burning; therefore, rare plants in this area would not be impacted by fire.

Alternative B: No Action (Current Management)

The No Action Alternative would result in the least acres treated annually of any alternative because of the increased labor, time, and cost associated with physical control options. There would be no negative impacts to native vegetation from herbicide exposure or prescribed fire under this alternative; however, the BLM would be able to control weeds less effectively, allowing them to spread at a faster rate; adversely affecting native plant populations. Although physical control methods and mowing could be used instead of prescribed fire or herbicides, not all weeds are effectively treated by these methods.

Alternative C

Effects on non-target vegetation from physical and chemical controls would be similar to those under the Proposed Action. Fire effects on vegetation would not occur under this alternative. Substantially fewer acres of weeds would be treated due to the inability to use prescribed fire as a control option. Weed spread would be somewhat less than under the No Action Alternative because of the ability to use herbicides; however, large stands of YST and MDH would continue to expand and outcompete native vegetation.

Wildlife

Alternative A: Proposed Action

Wildlife populations are found in areas and habitats where their basic needs—food, shelter, water, reproduction, and movement—are met. Many animals have special behaviors and physical traits that allow them to successfully compete with other animals in only one or a few habitats; many threatened and endangered species fall into this category. Less specialized species can use a wider range of habitats. An important activity of the BLM is to manage vegetation to improve wildlife habitat. Plants, which are an important component of habitat, provide food and cover. Food is a source of nutrients and energy, while cover reduces the loss of energy by providing shelter from extremes in wind and temperature, and also affords protection from predators.

Wildlife may be harmed directly through contamination of food, water sources, habitat alteration, or direct contact. In general, field studies suggest that appropriate herbicide use is not likely to have significant direct toxicological effects on wildlife. However, some potential exists to individuals, populations, or species with both proper and improper use of chemical controls. Possible adverse direct effects to individual animals include death, damage to vital organs, change in body weight, decrease in healthy offspring, and increased susceptibility to predation. Four of the herbicides to be used as part of the Proposed Action – clopyralid, dicamba, glyphosate, and triclopyr – were assessed in the PEIS in relation to human health. Assuming that exposure risks to human receptors also apply to other terrestrial vertebrates, the following potential risks to wildlife species would be expected from use of these herbicides. The four herbicides showed slight to very slight toxicity to humans and no carcinogenicity. Risks were generally rated as low to none for both receptor groups and all three exposure rates. The HHRA portion of the PEIS (BLM 2007a) found no risks to humans from the inert ingredients associated with the herbicides, including adjuvants. These results indicate generally no or low risk of toxic effects from herbicides. Although the BLM has not yet completed an HHRA for aminopyralid, this chemical is currently approved for use by the EPA and in the state of CA, and is used by private, State and Federal agencies to treat YST. It is considered to be the most effective chemical for YST with the least amount of toxicity.

Adverse indirect effects include reduction in plant species diversity and consequent availability of preferred food, habitat, and breeding areas; decrease in wildlife population densities within the first year following application as a result of limited reproduction; habitat and range disruption if treated areas are avoided due to habitat changes; and increase in predation of due to loss of cover. Because of the relatively low risk of toxicological effects to most wildlife even with direct spraying, it can be said that the main risk to wildlife from herbicide use is habitat modification.

However, forage species and wildlife use of treated areas are likely to recover two to several years after treatment.

The extent of direct and indirect impacts to wildlife would vary by the effectiveness of herbicide treatments in controlling target plants and promoting the growth of native vegetation, as well as by the extent and method of treatment. The impacts of herbicides on wildlife would depend on the sensitivity of each species to the particular herbicides used, the pathway by which the individual animal was exposed to the herbicide, and indirectly on the degree to which a species or individual was positively or negatively affected by changes in habitat. Species that reside in an area year-round and have a small home range (e.g., insects, small mammals, territorial birds), would have a greater chance of being directly adversely impacted if their home range was partially or completely sprayed because they would have greater exposure to herbicides—either via direct contact upon application or indirect contact as a result of touching or ingesting treated vegetation. In addition, species feeding on animals that have been exposed to high levels of herbicides would be more likely to be impacted, particularly if the herbicide bioaccumulates in their tissues. Wildlife inhabiting subsurface areas (e.g., insects, burrowing mammals) may also be at higher risk if soils are non-porous and herbicides have high soil-residence times. The degree of interception by vegetation, which depends on site and application characteristics, would also affect direct spray impacts.

Physical control techniques and mowing could result in short-term displacement of wildlife in the vicinity of the treatments. Physical control could require the presence of many people and/or multiple treatments, possibly within a few months, that could cause repeated displacement of wildlife in the treatment area. This could cause negligible, short-term, site specific, adverse impacts in the form of energy expenditure. The impacts of physical/mowing control techniques would be slight and of little significance to wildlife populations.

Prescribed fire could change the composition and distribution of vegetation and could also improve the palatability and nutritional value of forbs, grasses, and some shrubs. Fire could kill and injure animals, although this would not be expected in the project area due to the small scale of prescribed fire proposed in the project area (see associated Burn Plan). The ecological effects of weed invasions on wildlife habitat have been studied. Invasive plants displace native vegetation and unlike the native vegetation they displace, invasive species typically have little value for native wildlife. Because of the spines that YST and other thistles produce, they can discourage access by wildlife even into areas that would otherwise provide forage or other resources. Some invasive plants, like oblong spurge, are toxic to wildlife and can produce digestive problems or other issues.

Implementing the Proposed Action to control noxious and invasive weeds would give BLM resource managers the best ability to restore native plant communities and their function for the benefit of all wildlife. Overall beneficial effects would be greater under Alternative A than any of the other alternatives because the combination of prescribed fire, herbicides and physical treatment methods has the best potential to achieve the desired level of positive effect on the habitat. While the more extensive annual treatments possible under this alternative would pose a somewhat greater risk to wildlife because of more potential for direct and indirect exposure to prescribed fire and herbicides, these risks remain low overall. The negative impact of loss of

vegetation cover following treatment in areas of dense weeds would be temporary and more than offset by the long-term benefit of enhanced plant species diversity and forage quality.

Special Status Wildlife Species:

Impacts could result from the application of herbicides in or adjacent to valley elderberry longhorn beetle habitat. Impacts including direct mortality and loss of host plants could be associated with the use of herbicides, their derivatives, or their dispersants. Prescribed burns may result in direct mortality of the beetle if occupied shrubs are consumed. Prescribed burns may also result in direct mortality if burns are conducted within occupied habitat during the period when dispersing and breeding adults are present (i.e.: during the flight period – late March through June). These potential effects will be avoided, mitigated or reduced due to the Project Design Features listed below:

- To avoid impacts to those special status species that live in water or riparian areas there would be a 25' spray buffer around any open water for broadcast application of herbicides and a 10 ' spray buffer during spot herbicide treatments, as well as a provision to cancel spraying if winds exceed 10 mph.

- Blue elderberry shrubs (*Sambucus nigra* ssp. *cerulea*), which provide habitat for the Federally threatened valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), would be protected from fire by building a fire-line around each blue elderberry shrub, or group of shrubs, with one or more stems measuring one inch in diameter or greater at ground level in the burn unit. The fire-line will be built just outside of the 100-foot no-ground-disturbance elderberry shrub buffer. In addition, a 100-foot elderberry shrub buffer will be established within which no broadcast herbicide treatments will be allowed, and a 50-foot elderberry shrub buffer will be established within which no spot herbicide treatment will be allowed. Pre-treatment surveys will be conducted within each treatment unit, and each blue elderberry shrub, or group of shrubs, with one or more stems measuring one inch in diameter or greater at ground level within the treatment area will be flagged prior to implementation of the proposed action. A 100-foot and 50-foot buffer will also be flagged around each blue elderberry shrub, or group of shrubs, that meet the above criteria. The pre-treatment survey will involve a careful count of all stems greater than one inch in diameter at ground level. The stem count will follow the guidelines in Table 1, Page 12 of U.S. Fish and Wildlife Service 1999 Conservation Guidelines for the Valley Elderberry Longhorn Beetle (USFWS 1999). Specifically, stems will be categorized as 1-3 inches, 3-5 inches and greater than 5 inches, in riparian or non-riparian habitat, and whether they have beetle exit holes or not. Post-treatment monitoring will be conducted to determine if any blue elderberry shrubs, or stems measuring one inch in diameter or greater at ground level, are damaged or killed by the proposed action. In the unlikely scenario that elderberry shrubs or stems are impacted by the proposed action, each elderberry stem measuring 1.0 inches or greater in diameter that is adversely affected as a result of the proposed project would be replaced according to USFWS, 1999. Fire-control lines will be built outside of the 100-foot no-disturbance buffer for blue elderberry shrubs.

- Herbicide applicators, fire staff, and others carrying out the proposed action will be trained to recognize blue elderberry and rare plants in the project area.

The BLM has determined that the proposed action may affect, but it not likely to affect the valley elderberry longhorn beetle. The BLM is currently in the process of informally consulting with the USFWS regarding the proposed action.

Alternative B: No Action (Current Management)

Invasive plants are of limited utility to wildlife. By displacing native vegetation and denying access to other resources, invasive plants can degrade wildlife habitat. YST and other thistles have been shown to limit wildlife access, especially in their mature spiny stages. Other weeds such as oblong spurge are toxic or inedible to wildlife. Weed treatments would be less extensive under this alternative because there would be no use of prescribed fire or herbicides which would result in a smaller risk to wildlife due to less potential for direct and indirect exposure from prescribed fire and herbicides; however, these risks remain low overall. The No Action Alternative would allow more habitat to become infested with weed species, degrading the habitat even further.

Alternative C

Under this alternative, prescribed fire would not be utilized and therefore the risks to wildlife from prescribed fire would not occur. More acres of weeds would be treated than under the No Action Alternative due to the use of herbicides; however, much fewer acres would be treated than under the Proposed Action due to the lack of prescribed fire. Beneficial effects to wildlife habitat would be less than under the Proposed Action.

Visual Resources

Alternative A: Proposed Action

The proposed vegetation treatments would affect visual resources by temporarily changing the scenic quality of the landscape. Weed treatments would kill or harm vegetation in the treated area, resulting in a more open, "browned" or "blackened" landscape until new plants were to grow in the area (BLM 2007b). However, areas that are dominated by invasive species are usually less visually aesthetic and deemed to be impacted by humans and hence not "natural." Treatments that aim to rehabilitate degraded ecosystems, if successful, would result in plant communities that are dominated by native species. Physical control techniques would create minimal visual impacts due to the small areas in which they would be used. Prescribed fire and broadcast herbicide spraying would create larger tracts of land with charred or dying vegetation. For all treatment methods, effects to visual resources would begin to disappear within one to two growing seasons after treatment as more desirable species recolonize the area. If desirable vegetation did not fill in the affected areas within a year or two following treatments, revegetation or the seeding and/or planting of grasses, forbs, and/or shrubs may occur.

In general, herbicide treatments would have short-term negative effects and long-term positive effects on visual resources. The effects of treatments over a large portion of the landscape are more likely to be observed by people than the effects of small-scale treatments. Impacts to visual resources from herbicide treatments would begin to disappear within one or two growing seasons. The regrowth of native vegetation on the site would eliminate much of the stark contrasts and visual impacts within a cleared area.

The removal of vegetation could have short-terms effects to the visual qualities of treatment sites by creating openings and obvious changes in color or texture due to direct mortality of the weeds and some non-target plant species that provide a noticeable visual contrast to the surrounding areas of green vegetation. The degree of these effects would depend on the amount of area treated, the appearance of the background vegetation and the vegetation being removed, the type of treatment, the season of treatment, and the sensitivity of the viewshed.

Over the long term, vegetation treatments would likely improve visual resources on public lands. Treatments that aim to rehabilitate degraded ecosystems, if successful, would result in plant communities that are dominated by native species, which is considered to be positive and would significantly outweigh any short-term negative impacts.

For small treatment areas, negative impacts from the presence of dead or dying plants, an overall decrease in plant cover, and an increase in bare soil would generally be less severe due to the smaller scale of the treatment. Although the small scale would be less effective at reducing the conspicuousness of the treatment if located adjacent to an area of human use—e.g., at a trailhead or along a trail—the close viewing distance should make it apparent that the area has been treated for weeds. For large treatment areas, and especially for those with a high initial cover by target species, herbicide treatments may cause the landscape to have less green color and/or less total plant cover, with a greater amount of bare soil. However, it should be apparent that the changes are temporary and due to weed treatments and hence beneficial.

The portion of the Greenwood Creek parcel – south of the river (Clark Mountain) - which is classified as VRM Class I would not receive large-scale weed treatments such as from prescribed fire or broadcast herbicide treatments due to access issues. This would reduce visual impacts to this area. The remaining project area which is VRM Class II would receive both large and small scale weed treatments but as mentioned previously, the negative effects to visual resources would be short-term and would begin to disappear within one to two growing seasons after treatment as more desirable species recolonize the area.

Alternative B: No Action (Current Management)

Because no herbicide treatments or prescribed fire would take place under this alternative, visual resources would not be adversely affected by changes in vegetation related to the presence of charred or dying vegetation. Efforts would be limited to physical control methods and mowing along trails which would not result in a large visual impact. Conversely, visual quality aspects adversely affected by a dominance of weeds would not improve over time and instead would become further degraded as invasive plants continue to spread.

Alternative C

Visual impacts from prescribed burning would not occur under this alternative. The use of herbicides and physical control methods would result in small treatment areas with dead or dying vegetation, an overall decrease in plant cover, and an increase in bare soil. These impacts would be short-term and negligible after one or two growing seasons.

4.2 Cumulative Impacts

Lands along the South Fork of the American River, from Chili Bar to Salmon Falls (including the project area), will continue to be a popular and heavily used area for recreation over the next 25 years and likely well beyond. Recreationists and other user groups have contributed, and will continue to contribute to, the weed infestations on BLM and other lands within the South Fork corridor by acting inadvertently as vectors for weed introduction and spread. If weeds are not effectively controlled, native plant communities will continue to be degraded and would negatively impact recreational experience, visual resources, and the ecology of the river corridor. Though weed introduction and spread within the South Fork corridor are difficult to foresee (and infestations on non-BLM lands are out of BLM's control), Alternative A would have the most beneficial effect on native plant communities and recreation within the river corridor in the long term by reducing the spread of weeds the most through the ability to use a combination of herbicides, prescribed fire, mowing and physical controls to treat large infestations of YST and MDH. Alternative B, the No Action Alternative, would have the most negative effect on native plant communities because weeds would spread within the project area at the most rapid rate among the alternatives. Alternative C would be intermediate between Alternatives A and B in the rate of weed spread and the negative impacts on recreation and native plant communities.

5.0 Agencies and Persons Consulted

- Diana Brink – CA BLM State Office Rangeland Management Specialist and Noxious and Invasive Weed Coordinator
- Matthew Brown – Botanist for the Eldorado National Forest
- Bruce Delgado – Botanist at the Hollister BLM Field Office
- LeeAnne Mila – El Dorado County Department of Agriculture
- Craig Thomsen – University of California, Davis – Department of Plant Sciences Staff Research Associate

5.1 BLM Interdisciplinary Team

Reviewers:

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NEPA coordinator/archaeologist

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Outdoor recreation planner/VRM specialist

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Fire Management Officer

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Botanist/EA preparer

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Wildlife biologist

5.2 Availability of Document and Comment Procedures

This EA, posted on Mother Lode Field Office's website (www.blm.gov/motherlode) under Information, NEPA (or available upon request), will be available for a 15-day public review period. Comments should be sent to the Mother Lode Field Office, 5152 Hillsdale Circle, El Dorado Hills, CA 95762 or emailed to us at bbrennem@blm.gov.

6.0 References

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APPENDIX A

Standard Operating Procedures for Weed Treatments on BLM Lands in the Mother Lode Field Office

Resource Element	Standard Operating Procedure
General See BLM Handbook H-9011-1 (*Chemical Pest Control*) and manuals 1112 (*Safety*), 9011 (*Chemical Pest Control*), 9012 (*Expenditure of Rangeland Insect Pest Control Funds*), 9015 (*Integrated Weed Management)*, and 9220 (*Integrated Pest Management*)	• Prepare spill contingency plan in advance of treatment. • Conduct a pretreatment survey before applying herbicides. • Select herbicide that is least damaging to environment while providing the desired results. • Select herbicide products carefully to minimize additional impacts from degradates, adjuvants, inert ingredients, and tank mixtures. • Apply the least amount of herbicide needed to achieve the desired result. • Follow product label for use and storage. • Have licensed applicators apply herbicides. • Use only EPA-approved herbicides and follow product label directions and "advisory" statements. • Review, understand, and conform to the "Environmental Hazards" section on the herbicide label. This section warns of known pesticide risks to the environment and provides practical ways to avoid harm to organisms or the environment. • Minimize the size of application areas, when feasible. • Post treated areas and specify reentry or rest times, if appropriate. • Keep copy of Material Safety Data Sheets (MSDSs) at work sites. MSDSs available for review at http://www.cdms.net/. • Keep records of each application, including the active ingredient, formulation, application rate, date, time, and location. • Avoid accidental direct spray and spills to minimize risks to resources. • Minimize drift by not applying herbicides when winds exceed 10 mph or a serious rainfall event is imminent. • Conduct pre-treatment surveys for sensitive habitat and special status species within or adjacent to proposed treatment areas. • Consider site characteristics, environmental conditions, and application equipment in order to minimize damage to non-target vegetation. • Use drift reduction agents and low volatility formulations, as appropriate, to reduce the drift hazard to non-target species. • Turn off applied treatments at the completion of spray runs and during turns to start another spray run. • Refer to the herbicide label when planning revegetation to ensure that subsequent vegetation would not be injured following application of the herbicide. • Clean OHVs to remove seeds.
Air Quality See Manual 7000 (Soil, Water, and Air Management)	• Consider the effects of wind, humidity, temperature inversions, and heavy rainfall on herbicide effectiveness and risks. • Apply herbicides in favorable weather conditions to minimize drift. For example, do not treat when winds exceed 10 mph or rainfall is imminent. • Use drift reduction agents, as appropriate, to reduce the drift hazard. • Select proper application equipment (e.g., spray equipment that produces 200- to 800-micron diameter droplets [spray droplets of 100 microns and less are most prone to drift]). Select proper application methods (e.g., set maximum spray heights, use appropriate buffer distances between spray sites and non-target resources).
Water Resources See Manual 7000 (Soil,	• Consider climate, soil type, slope, and vegetation type when developing herbicide treatment programs. • Select herbicide products to minimize impacts to water. This is especially

Water, and Air Management)	important for application scenarios that involve risk from active ingredients in a particular herbicide, as predicted by risk assessments. • Use local historical weather data to choose the month of treatment. Considering the phenology of the target species, schedule treatments based on the condition of the water body and existing water quality conditions. • Plan to treat between weather fronts (calms) and at appropriate time of day to avoid high winds that increase water movements, and to avoid potential stormwater runoff and water turbidity. • Review hydrogeologic maps of proposed treatment areas .Note depths to groundwater and areas of shallow groundwater and areas of surface water and groundwater interaction. Minimize treating areas with high risk for groundwater contamination. • Conduct mixing and loading operations in an area where an accidental spill would not contaminate a water body. • Do not rinse spray tanks in or near water bodies. • Maintain buffers between treatment areas and water bodies. Buffer widths should be developed based on herbicide- and site-specific criteria to minimize impacts to water bodies. Minimize the potential effects to surface water quality and quantity by stabilizing terrestrial areas as quickly as possible following treatment.
Wetlands and Riparian Areas	• Use a selective herbicide and a wick or backpack sprayer. • Use appropriate herbicide-free buffer zones for herbicides not labeled for aquatic use based on risk assessment guidance, with minimum widths of 25 feet for vehicle and 10 feet for hand-spray applications.
Vegetation See Handbook H-4410-1 (National Range Handbook) and Manuals 5000 (Forest Management) and 9015 (Integrated Weed Management)	• Refer to the herbicide label when planning revegetation to ensure that subsequent vegetation would not be injured following application of the herbicide. • Use native or sterile species for revegetation and restoration projects to compete with invasive species until desired vegetation establishes • Use weed-free feed for horses and pack animals. Use weed-free straw or hay mulch for revegetation and other activities.
Pollinators	• Complete vegetation treatments seasonally before pollinator foraging plants bloom. • Time vegetation treatments to take place when foraging pollinators are least active both seasonally and daily. • Design vegetation treatment projects so that nectar and pollen sources for important pollinators and resources are treated in patches rather than in one single treatment. • Minimize herbicide application rates. Use typical rather than maximum rates where there are important pollinator resources. • Maintain herbicide free buffer zones around patches of important pollinator nectar and pollen sources. • Maintain herbicide free buffer zones around patches of important pollinator nesting habitat and hibernacula. • Make special note of pollinators that have single host plant species, and minimize herbicide spraying on those plants (if invasive species) and in their habitats.
Fish and Other Aquatic Organisms	• Use appropriate buffer zones based on label and risk assessment guidance. • Minimize treatments near fish-bearing water bodies during periods when fish

See Manuals 6500 (Wildlife and Fisheries Management) and 6780 (Habitat Management Plans)	are in life stages most sensitive to the herbicide(s) used, and use spot rather than broadcast or aerial treatments. • Use appropriate application equipment/method near water bodies if the potential for offsite drift exists. • For treatment of aquatic vegetation, 1) treat only that portion of the aquatic system necessary to achieve acceptable vegetation management, 2) use the appropriate application method to minimize the potential for injury to desirable vegetation and aquatic organisms, and 3) follow water use restrictions presented on the herbicide label.
Wildlife See Manuals 6500 (Wildlife and Fisheries Management) and 6780 (Habitat Management Plans)	• Use herbicides of low toxicity to wildlife, where feasible. • Use spot applications or low-boom broadcast operations where possible to limit the probability of contaminating non-target food and water sources, especially non-target vegetation over areas larger than the treatment area. • Use timing restrictions (e.g., do not treat during critical wildlife breeding or staging periods) to minimize impacts to wildlife.
Threatened, Endangered, and Sensitive Species See Manual 6840 (Special Status Species)	• Survey for special status species before treating an area. Consider effects to special status species when designing herbicide treatment programs. • Use a selective herbicide and a wick or backpack sprayer to minimize risks to special status plants. • Avoid treating vegetation during time-sensitive periods (e.g., nesting and migration, sensitive life stages) for special status species in area to be treated.
Visual Resources See Handbooks H-8410-1 (Visual Resource Inventory) and H-8431-1 (Visual Resource Contrast Rating) and Manual 8400 (Visual Resource Management)	• Minimize the use of broadcast foliar applications in sensitive watersheds to avoid creating large areas of browned vegetation. • Minimize offsite drift and mobility of herbicides (e.g., do not treat when winds exceed 10 mph; minimize treatment in areas where herbicide runoff is likely; establish appropriate buffer widths between treatment areas and residences) to contain visual changes to the intended treatment area. • If the area is a Class I or II visual resource, ensure that the change to the characteristic landscape is low and not easily seen (Class I) or, if seen, does not attract the attention of the casual viewer (Class II). • Lessen visual impacts by 1) designing projects to blend in with topographic forms, 2) leaving some low-growing trees or planting some low-growing tree seedlings adjacent to the treatment area to screen short-term effects, and 3) revegetating the site following treatment. • When restoring treated areas, design activities to repeat the form, line, color, and texture of the natural landscape character conditions to meet established Visual Resource Management (VRM) objectives.
Recreation See Handbook H-1601-1 (Land Use Planning Handbook, Appendix C)	• Schedule treatments to avoid peak recreational use times, while taking into account the optimum management period for the targeted species. • Notify the public of treatment methods, hazards, times, and nearby alternative recreation areas. • Adhere to entry restrictions identified on the herbicide label for public and worker access. • Post signs noting exclusion areas and the duration of exclusion, if necessary. Use herbicides during periods of low human use, where feasible.

Social and Economic Values	• Post treated areas and specify reentry or rest times, if appropriate. • Notify the public of the project to improve coordination and avoid potential conflicts and safety concerns during implementation of the treatment. • Control public access until potential treatment hazards no longer exist. • Observe restricted entry intervals specified by the herbicide label. • Notify local emergency personnel of proposed treatments. • Use spot applications or low-boom broadcast applications where possible to limit the probability of contaminating non-target food and water sources, especially vegetation over areas larger than the treatment area. • Consult with Native American tribes and Alaska Native groups to locate any areas of vegetation that are of significance to the tribe and that might be affected by herbicide treatments. • To the degree possible within the law, hire local contractors and workers to assist with herbicide application projects and purchase materials and supplies, including chemicals, for herbicide treatment projects through local suppliers.
Rights-of-Way	• Coordinate vegetation management activities where joint or multiple use of a ROW exists. • Notify other public land users within or adjacent to the ROW proposed for treatment.
Human Health and Safety	• Establish a buffer between treatment areas and human residences based on guidance given in the HHRA, with a minimum buffer of 100 feet for ground applications, unless a written waiver is granted. • Use protective equipment as directed by the herbicide label. • Post treated areas with appropriate signs at common public access areas. • Observe restricted entry intervals specified by the herbicide label. • Provide public notification in newspapers or other media where the potential exists for public exposure. • Have a copy of MSDSs at work site. • Notify local emergency personnel of proposed treatments. • Contain and clean up spills and request help as needed. • Secure containers during transport. • Follow label directions for use and storage. • Dispose of unwanted herbicides promptly and correctly.
Cultural Resources and Native American Religious Concerns See Handbooks H-8120-1 (Guidelines for Conducting Tribal Consultation) and Manuals 8100 (The Foundations for Managing Cultural Resources), 8120 (Tribal Consultation Under Cultural Resource Authorities).	• Follow standard procedures for compliance with Section 106 of the NHPA, as implemented through California State protocol. • Consult with tribes to locate any areas of vegetation that are of significance to the tribe and that might be affected by herbicide treatments. • Work with tribes to minimize impacts to these resources. • Follow guidance under Human Health and Safety in areas that may be visited by Native peoples after treatments. • Native American Traditional Cultural Properties (TCPs) are to be considered in the planning and completion of Federal actions in accordance with Section 106 of the NHPA, as amended (Guidelines of Bulletin 38 of the National Register). Physically affecting the integrity of traditional cultural properties, including plant collecting places, should be avoided when possible. To protect and preserve Native American religious practices, the Executive Order of May 24, 1996 requires the implementation of "procedures to ensure reasonable notice of Proposed Actions or land management policies that may restrict future access to or ceremonial use of, or adversely affect the physical integrity of, sacred sites." This notice further states, "where appropriate, agencies shall maintain the confidentiality of sacred sites."

APPENDIX B

Mitigation Measures for Weed Treatments on BLM Lands in the Mother Lode Field Office

Vegetation Treatments EIS Mitigation Measures

Resource	Mitigation Measures
Air Quality	None proposed.
Soil Resources	None proposed.
Water Resources and Quality	• Establish appropriate (herbicide-specific) buffer zones to downstream water bodies, habitats, and species/populations of interest.
Wetland and Riparian Areas	• See mitigation for Water Resources and Quality and Vegetation.
Vegetation	• Establish appropriate (herbicide specific) buffer zones around downstream water bodies, habitats, and species/populations of interest. Consult the ERAs for more specific information on appropriate buffer distances under different soil, moisture, vegetation, and application scenarios. • To protect special status plant species, implement all conservation measures for plants presented in the *Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Biological Assessment*.
Fish and Other Aquatic Organisms	• Limit the use of terrestrial herbicides in watersheds with characteristics suitable for potential surface runoff, and have fish-bearing streams, during periods when fish are in life stages most sensitive to the herbicide(s) used. • Implement all conservation measures for aquatic animals presented in the *Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Biological Assessment*. • Establish appropriate herbicide-specific buffer zones for water bodies, habitats, or fish or other aquatic species of interest.
Wildlife	• To minimize risks to terrestrial wildlife, do not exceed the typical application rate for applications of glyphosate or triclopyr where feasible. • Where practical, limit glyphosate to spot applications in rangeland and wildlife habitat areas to avoid contamination of wildlife food items. • To protect special status species, implement all conservation measures for terrestrial animals presented in the *Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Biological Assessment*. Apply these measures to special status species (refer to conservation measures for a similar size and type of species and same trophic guild).
Cultural Resources and Native American Religious Concerns	• A cultural resource inventory shall be conducted and Historic properties will be identified and protected prior to any direct or indirect impact by weed treatments on a project-by-project basis. Consultation with the SHPO, tribes, and other consulting parties will be conducted in accordance to the legal requirements of Section 106 of the NHPA as implemented through the Colorado State protocol.
Visual Resources	None proposed.
Recreation	• Mitigation measures that may apply to recreational resources are associated with human and ecological health. Refer to the Vegetation, Fish and Other Aquatic Resources, Wildlife Resources, and Human Health and Safety sections.
Human Health and Safety	• Avoid the maximum application rate when using triclopyr.

Integrated Weed Management Area